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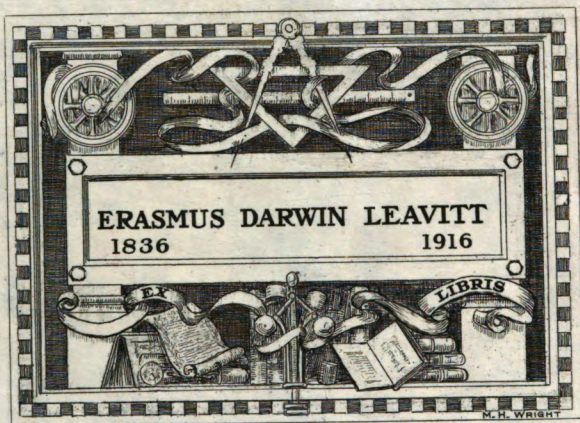
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AMERICAN SOCIETY OF CIVIL ENGINEERS.

INSTITUTED 1852.

PROCEEDINGS.

NOTE.—This Society is not responsible, as a body, for the facts and opinions advanced in any of its publications.

SOCIETY AFFAIRS.

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MINUTES OF MEETINGS.

OF THE SOCIETY.

January 2d, 1901.—The meeting was called to order at 8.40 p. m., Vice-President Rudolph Hering in the chair; Charles Warren Hunt, Secretary; and present, also, 80 members and 14 guests.

The minutes of the meetings of December 5th and 19th, 1900, were approved, as printed in *Proceedings* for December, 1900.

A paper by C. R. Grimm, M. Am. Soc. C. E., entitled "The Kinzua Viaduct of the Erie Railroad Company," was presented by the Secretary, who also read a discussion by George S. Morison, M. Am. Soc. C. E.

The paper was also discussed by Messrs. R. S. Buck, H. A. La Chicotte, L. S. Moisseiff and C. W. Buchholz.

Ballots were canvassed, and the following candidates declared elected:

AS MEMBERS.

CHRISTIAN ANDERSEN, Portland, Ore.
ROBERT COOKE CLARKSON, Philadelphia, Pa.
THEOPHILUS MICHELL, Trichinopoly, Madras, India.
ALBERT LENNOX RICHARDS, Rock Island, Ill.
OLIVER PERRY SABLE, Jr., Providence, R. I.
CALEB MILLS SAVILLE, Boston, Mass.
FRANK ELLSWORTH TRASK, Ontario, Cal.
BEVERLY REID VALUE, New York City.

AS ASSOCIATE MEMBERS.

ALFRED CARROLL BELL, Minneapolis, Minn.
JOHN BLODGETT, Pittsburg, Pa.
JAMES HENRY BRACE, Albany, N. Y.
MORTON BURDEN, Youngstown, Ohio.
BURT COLE, Los Angeles, Cal.
BENJAMIN CURTIS DONHAM, Seoul, Korea.
WALTER GORDON FOX, Guayaquil, Ecuador.
JAMES MADISON JACKSON, Parkersburg, W. Va.
FRED WILLIAM LEPPER, Chicago, Ill.
ALEXIS JOSEPH MALUKOFF, New York City.
RICHARD MOREY, Kansas City, Mo.
EUGENE TAYLOR MORRISON, Harrisburg, Pa.
GEORGE FREEMAN ROWELL, Pittsburg, Pa.
HENRY KENT SELTZER, Kansas City, Mo.
JULIAN THORNLEY, New York City.
JOHN ALBERT VOGLESON, Sault Ste. Marie, Mich.
WILBUR JAY WATSON, Cleveland, Ohio.
JOHN T. WHISTLER, Washington, D. C.
WILLIAM MACINTIRE WHITE, Baltimore, Md.
SILAS WOODARD, Washington, D. C.

The Secretary announced the election, by the Board of Direction, on December 28th, 1900, of the following candidates:

AS ASSOCIATE.

HENRY CODDINGTON MEYER, Jr., New York City.

AS JUNIORS.

ALEXANDER HAMILL, Jr., Jersey City, N. J.
MANUEL DE LA MORA, Guadalajara, Mexico.
EDUARDO ORTIZ, Brooklyn, N. Y.
SETH MORTON VAN LOAN, Catskill, N. Y.

The Secretary gave an outline of the programme for the Forty-eighth Annual Meeting.

Adjourned.

OF THE BOARD OF DIRECTION.

(Abstract.)

December 28th, 1900.—8.15 p. m.—Vice-President Hering in the chair; Charles Warren Hunt, Secretary, and present, also, Messrs. Bensel, Deyo, Knap, Manley, O'Rourke, Ricketts and Seaman.

A report was received from the Committee appointed to recommend the award of prizes for the year ending July, 1900, and the prizes were awarded by the Board, in accordance with the recommendations of the Committee, as follows:

The Norman Medal to James A. Seddon, M. Am. Soc. C. E., for his paper, entitled "River Hydraulics."

The Thomas Fitch Rowland Prize to Allen Hazen, M. Am. Soc. C. E., for his paper on "The Albany Water Filtration Plant."

The Collingwood Prize for Juniors to Robert P. Woods, Assoc. M. Am. Soc. C. E., for his paper on "Street Grades and Cross-Sections in Asphalt and Cement."

The appointment of the following Committee of Arrangements for the Annual Meeting was announced: Messrs. Joseph O. Osgood, R. S. Buck, Albert Carr and Charles Warren Hunt.

The following resignations were received and accepted:

EDWIN MITCHELL, Assoc. M. Am. Soc. C. E.

LOUIS D. FOUQUET, Jun. Am. Soc. C. E.

Applications were considered and other routine business transacted.

One candidate for Associate and four for Junior were elected.

Adjourned.

ANNOUNCEMENTS.

In accordance with the resolution of the Board of Direction, the House of the Society is open every day, except Sunday, from 9 A. M. to 10 P. M.

MEETINGS.

Wednesday, February 6th, 1901.—8.30 P. M.—A regular business meeting will be held. Ballots for membership will be canvassed, and a paper, entitled "The Adjustment of a Transit Survey as Compared with that of a Compass Survey," by Charles L. Crandall, M. Am. Soc. C. E., will be presented for discussion.

This paper was printed in the December, 1900, number of *Proceedings*.

Wednesday, February 20th, 1901.—8.30 P. M.—A regular meeting will be held, at which a paper, entitled "The Construction of Gravity Sand Filters at Nyack, N. Y.," by G. N. Houston, Assoc. M. Am. Soc. C. E., will be presented.

This paper was printed in the December, 1900, number of *Proceedings*.

Wednesday, March 6th, 1901.—8.30 P. M.—A regular meeting will be held. Ballots for membership will be canvassed, and a paper, entitled "Flow in the Sewers of the North Metropolitan Sewerage System of Massachusetts," by Theodore Horton, Assoc. M. Am. Soc. C. E., will be presented.

This paper is printed in this number of *Proceedings*.

ANNUAL CONVENTION OF 1901.

The Thirty-third Annual Convention of the Society will be held at Niagara Falls, N. Y., on Tuesday, Wednesday, Thursday and Friday, June 25th, 26th, 27th and 28th, 1901.

ANNUAL REPORT OF THE BOARD OF DIRECTION FOR THE YEAR ENDING DECEMBER 31st, 1900.

PRESENTED AT THE ANNUAL MEETING, JANUARY 16TH, 1901.

The Board of Direction, in compliance with the Constitution of the Society, presents its report for the year ending December 31st, 1900.

MEMBERSHIP.

The changes in membership are shown in the following table: ‡

	JAN. 1ST, 1900.			JAN. 1ST, 1901.			LOSSES.				ADDI- TIONS.		TOTALS	
	Resident.	Non-Resident.	Total.	Resident.	Non-Resident.	Total.	Transfer.	Resignation.	Dropped.	Death.	Transfer.	Election.	Loss.	Gain.
Honorary Members.....	1	8	9	1	8	9	..	..	..	..	..	..	..	..
Corresponding Members		3	3		3	3	..	..	..	..	..	..	..	..
Members.....	257	1 113	1 370	280	1 140	1 420	..	3	5	21	*21	58	29	79
Associate Members.....	117	307	424	142	374	516	20	2	2	1	+35	82	25	117
Associates.....	31	62	93	36	65	101	..	..	..	1	+2	7	1	9
Juniors.....	107	155	262	99	152	251	38	3	19	1	..	50	61	50
Fellows.....	12	26	38	9	28	37	..	..	..	1	..	..	1	..
Totals.....	525	1 674	2 199	567	1 770	2 337	58	8	26	25	58	197	117	255

*20 Associate Members and 1 Junior.

† Juniors.

‡ In tables heretofore published "Subscribers" were also given; these are omitted in the present table.

It will be seen by the table that the net increase during the year was 138, which is the largest annual increase in the history of the Society.

The total number of applications received during the year was 308.

Action taken by the Board has been as follows:

Passed to ballot as Members.....	87
Passed to ballot as Associate Members.....	126
Elected Associates.....	8
Elected Juniors.....	55
Total.....	276
Applications now awaiting action.....	61

The increase in the number of candidates defeated by ballot leads the Board to the belief that there is not a full understanding as to the care with which all applications are considered, and the weight which is always given to confidential communications in regard to any candidate. It is believed that whenever the use of a negative vote is justifiable, the candidate would not be passed to ballot if all available information were placed in the hands of the Board, and the fact that some of those who are defeated on the first ballot are again passed to a Reconsideration Ballot, and thereon elected, means either that the case against the applicant is not a good one, or that the Board has not been supplied with information on which a refusal to pass his name to ballot could be based. It is not intended to criticize in any way the exercise of the right of suffrage, but to express the belief that Members, generally, do not understand that the most certain and effectual manner in which to prevent the election of an undesirable candidate is to place in the hands of the Board the reasons which would impel them to cast a negative vote. If the monthly Blue Lists were carefully scanned, and each person connected with the Society would feel it his duty to give the Board the benefit of his knowledge of any applicant, it is confidently believed that better results would obtain, and that the special Reconsideration Ballot would be much less frequent and possibly disappear.

The losses by death reported during the year number 25. They are as follows:

Twenty-one Members: James Colwell Aldrich, William H. H. Benaard, Edward Arnold Correa, William Giddings Curtis, Frank Paul Davis, Bolton Waller DeCourcy, Edward Bates Dorsey, Norman Wilder Eayrs, George Dana Emerson, Ernest Grey Freeman, Bently Douglas Hasell, John MacLeod, James David Moffet, George H. Norman, Henry Wadsworth Reed, Marc John Reiseger, Fairman Rogers, Hamilton Smith, William Starling, Arthur Towne Thomas, Edward Higginson Williams.

One Associate Member: Dominik Lindenthal.

One Associate: Joseph Ruggles Richards.

One Junior: William White Seitzinger.

One Fellow: Collis P. Huntington.

LIBRARY.

The following sums have been expended during the year:

For binding 25 Volumes.....	\$50.60
For purchase of books.....	21.50
	<hr/>
	\$72.10

The additions to the Library from all sources during the year have been as follows:

Bound Volumes.....	281
Unbound Volumes.....	359
Specifications.....	254
Maps, Photographs, Charts, etc.....	127
	<hr/>
	1 021

The total attendance registered in the Reading Room during the year was 1 784.

Since the last report of the Board the arduous work of reclassifying and indexing the Library, which has been in progress for more than two years, has been completed, and a Catalogue, a volume of 703 pages, covering 15 824 titles, which represent 32 788 volumes, pamphlets, maps, photographs, specifications, etc., has been printed and distributed to all persons connected with the Society.

The Board desires to emphasize the suggestion made in the circular issued with the Catalogue, that an effort on the part of each member would soon result in filling many of the incomplete sets of reports, etc., now on our shelves. The completion of the Index places the Library in a far better position than ever before, and it will now be possible by judicious purchase to secure many volumes which should be available for reference.

The Library Committee has made an estimate of the value of the Library, which appears in the statement of the assets of the Society.

PUBLICATIONS.

During the year the usual ten numbers of *Proceedings* and two volumes of *Transactions* have been published, but a comparison of the table given on page 4 with a similar table in the last Annual Report of the Board shows an increase in the number of pages and illustrations published.

The publications of the Society evidence a steady improvement in the character of the papers, thus increasing their value, both to the members and to the profession at large. The arduous editorial work on the *Transactions*, and the care with which the Library Catalogue has been prepared, reflect great credit upon the Secretary and his assistants.

Your Board has recently authorized the Secretary to prepare a general index to the forty-four volumes of *Transactions*, which it is hoped will be ready within the next few months.

SUMMARY OF PUBLICATIONS FOR 1900.

	Number issued.	Total edition of each Number.	Number of Pages.	Plates.	Cuts.
<i>Transactions*</i>	2	2 600	1 152	76	305
<i>Proceedings*</i>	10	2 750	1 529	50	257
Constitution and List of Members.....	1	2 800	212	....	....
Advertisements.....	10	2 700	143	....	....
Catalogue of Library...	1	3 000	702	....	....
Totals.....			3 738	126	562

The cost of publications has been:

For Paper, Printing, Binding, etc., <i>Transactions</i> and <i>Proceedings</i>	\$8 237.53
For Plates and Cuts.....	1 376.57
For Boxes, Mailing Lists, Copyright and sundry expenses.....	224.27
For Commission on Advertisements.....	322.48
For 7 400 copies of Papers and Memoirs.....	685.45
For List of Members.....	738.08
For Library Catalogue.....	3 221.39
Total.....	\$14 805.77
For time of officers and clerks charged to Publications.....	3 379.26
Total.....	\$18 185.03
Deduct amount received for advertisements.....	\$2 221.25
Deduct amount received for sale of publica- tions.....	2 394.00
	4 615.25
Net cost of publications.....	\$13 569.78
Net cost of publications for 1899 (see Report of Board of Direction, January, 1900).....	9 800.07

MEETINGS.

During the year 25 meetings have been held, as follows: At the Annual Meeting, 2; at the Annual Convention, 5; regular semi-monthly meetings, 18.

At these meetings 18 formal papers, 4 of which were illustrated with lantern slides, 4 topics for informal discussion, and 1 illustrated lecture, were presented.

The Thirty-second Annual Convention, held in the House of the

* Includes Indexes and Tables of Contents.

Institution of Civil Engineers, in London, was most successful. There were present at that meeting 68 members of the Society accompanied by 55 members of their families. The views of your Board in relation to this meeting were expressed in a recent communication to the Institution in the following words:

"Your cordial invitation to visit London, in a more or less organized body, during 1900, was accepted in the belief that a material and lasting benefit would be derived from the holding of a meeting of Engineers which would be International in character.

"The meeting of this Society, held in the home of the Parent Engineering Association of the World, brought together, for the exchange of professional views, a large number of engineers, comprising representatives from nine widely separated nations, and it is believed that the interest manifested, and the resulting technical discussions, fully justified the inauguration of such International Meetings."

MEDALS AND PRIZES.

The Norman Medal, for the year ending with the month of July, 1899, was awarded to E. Herbert Stone, M. Am. Soc. C. E., for his paper on "The Determination of Safe Working Stress for Railway Bridges of Wrought Iron and Steel."

The Thomas Fitch Rowland Prize, for the year ending with the month of July, 1899, was awarded to R. S. Buck, M. Am. Soc. C. E., for his paper, entitled "The Niagara Railway Arch."

The Collingwood Prize for Juniors, for the year ending with the month of July, 1899, was awarded to Julius Kahn, Jun. Am. Soc. C. E. (now Assoc. M. Am. Soc. C. E.), for his paper, entitled "The Coal Hoists of the Calumet and Hecla Mining Company."

FINANCES.

The financial affairs of the Society may be seen, from the reports of the Secretary and Treasurer, to be in excellent condition. It will be noticed that during the year, notwithstanding the additional expenses incident to the constantly increasing regular work, and the preparation and issue of the new "Catalogue of the Library," a payment of \$10 000 on the principal of the mortgage indebtedness has been made.

In the last report of your Board a recommendation was made that a sum approximately equal to the amount of the Entrance Fees received each year be applied to the extinguishment of the debt:

The Entrance Fees received during the past year amounted to \$4 905, and it is the intention to make a payment in 1901 of \$5 000, thus reducing the debt to \$70 000.

By order of the Board of Direction.

CHAS. WARREN HUNT,

Secretary.

NEW YORK. January 8th, 1901.

REPORT OF THE SECRETARY FOR THE

TO THE BOARD OF DIRECTION OF THE

GENTLEMEN,—I have the honor to present a statement of Re-December 31st, 1900, to which is appended a table showing the com- during the year, and its distribution to the several accounts. There is affairs of the Society.

NEW YORK, January 9th, 1901.

RECEIPTS.

Balance on hand December 31st, 1899, in Bank and Trust Company and in the hands of the Treasurer.....		\$13 728.36
Entrance Fees.....	\$4 905.00	
Current Dues.....	27 026.53	
Past Dues.....	1 428.01	
Advance Dues.....	9 528.03	
Certificates of Membership.....	201.57	
Badges.....	769.00	
Sales of Publications.....	2 394.00	
Advertisements.....	2 221.25	
Interest.....	112.76	
Compounding Dues.....	575.00	
Library.....	6.00	
Convention and Annual Meeting.....	984.00	
Binding.....	1 304.80	
Miscellaneous.....	39.33	
Historical Sketch.....	45.00	
		<hr/> 51 540.28
		<hr/> \$65 268.64

YEAR ENDING DECEMBER 31st, 1900.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

ceipts and Disbursements for the fiscal year of the Society, ending
pensation paid to persons who have been in the service of the Society
also presented a general balance sheet showing the condition of the

Respectfully submitted,

CHAS. WARREN HUNT,

Secretary.

DISBURSEMENTS.

General Printing and Stationery.....	\$1 404.12	
Publications.....	17 862.55	
Commission on Advertisements.....	322.48	
Postage.....	2 743.69	
Library.....	4 440.73	
Janitor.....	995.85	
Badges.....	684.00	
Contingencies.....	183.05	
Gas and Water.....	585.24	
Finance and Accounts.....	1 780.00	
House Supplies—Furniture.....	173.08	
Certificates of Membership.....	182.80	
Fuel.....	339.90	
Convention and Annual Meeting.....	2 017.89	
Insurance—Safe Deposit.....	6.00	
Medals and Prizes.....	182.81	
Interest and Taxes.....	3 437.00	
Current Business.....	6 489.01	
Repairs and Betterments.....	226.42	
Binding.....	1 282.20	
New Society House (Loan).....	10 000.00	
		\$55 338.82
Balance on hand December 31st, 1900.....		
In Garfield National Bank.....	\$4 347.58	
In Union Trust Company.....	4 597.24	
In hands of Treasurer.....	985.00	
		9 929.82
		<u>\$65 268.64</u>

GENERAL BALANCE SHEET, DECEMBER 31ST, 1900.
ACCOMPANYING REPORT OF THE SECRETARY.

ASSETS.		LIABILITIES.	
Building and Lot (cost).....	\$191 730.26	Dues for 1901, paid in advance.....	\$9 528.03
Furniture (cost).....	14 554.37	Mortgage Debt.....	75 000.00
Publications on hand (108 810 copies), inventoried value	13 295.82	*Funds invested in Society House and Lot, and Library.....	188 354.98
Library:			
Cash expended for Books, etc.	\$4 926.06		
Estimated Value of Donations.....	35 073.94		
40 000.00			
Due from Members.....	\$1 864.10		
" " Non-Members for Publications.....	133.64		
" for Advertising.....	1 375.00		
3 372.74			
Cash.....	9 929.82		
	<u>\$272 883.01</u>		<u>\$272 883.01</u>

* These funds have been derived from the following sources:

Norman Medal Fund.....	\$1 000.00
Rowland Prize Fund.....	1 222.50
Collingwood Prize Fund.....	1 000.00
Donations to Building Funds.....	45 479.50
Profit on sale of 23d St. House and on Securities.....	20 819.92
Profit on sale of Historical Sketch.....	1 486.06
Income Account.....	62 897.78
McCrean Swift Fund.....	1 000.00
Fellowship Fund.....	18 088.28
Compounding Dues Fund.....	5 896.00
Donations to Library, valued at.....	35 073.94
	<u>\$198 854.98</u>

The Norman Medal, Rowland Prize and Collingwood Prize Funds, no longer exist as such; the obligations under them having been assumed by the Society, with the consent of the donors.

TABLE SHOWING THE COMPENSATION PAID TO PERSONS WHO HAVE BEEN IN THE SERVICE OF THE SOCIETY DURING THE YEAR, AND ITS DISTRIBUTION TO THE SEVERAL ACCOUNTS ACCOMPANYING REPORT OF THE SECRETARY:

NAME.	Publica- tions.	Current Business.	Finance and Ac- counts.	Library.	Jan- itor.	Total.
Chas. Warren Hunt, Secre- tary.....	\$1 475.00	\$2 950.00	\$375.00	\$900.00		\$6 000.00
*John Thomson, Treasurer, Jan. 1st to 17th, 1900.....			4.57			4.57
J. M. Knap, Treasurer, Jan. 17th to Dec. 31st, 1900.....			95.48			95.48
T. J. McMinn, Asst. Secre- tary.....	1 475.50	316.29		295.00		2 086.79
E. H. Frick, Asst. Librarian	144.25	15.00		1 040.75		1 200.00
D. J. Mullen, Stenographer.		1 028.37				1 028.37
B. J. Burke, Clerk.....		1 000.00				1 000.00
M. F. Huckell, Bookkeeper.			800.00			800.00
*E. A. Angell, Office Assist- ant Jan. 1st to April 30th, 1900.....	107.00	69.75		123.25		300.00
E. R. Roosa, Office Assist- ant, March 1st to Dec. 31st, 1900.....	89.66	73.00		232.34		395.00
L. L. Parker, Asst. Libra- rian.....	7.50	8.50		530.11		546.11
*W. Waldele, Office Boy, Jan. 1st to Oct. 13th, 1900.....		207.77				207.77
Louis Gloor, Office Boy.....		207.16				207.16
H. Stugeleemann, Office Boy, Oct. 29th to Dec. 31st, 1900.....		42.03				42.00
Percy Harrold, Hall Boy.....		156.00				156.00
Frank E. Harrold, Janitor.....					\$710.00	710.00
*J. Simmons, Cleaner, Jan. 1st to July 31st, 1900.....					180.50	180.50
*C. Harrold, Cleaner, Aug. 1st to Sept. 9, 1900.....					31.50	31.50
*B. Wallace, Cleaner, Sept. 29th to Dec. 15th, 1900.....					104.35	104.35
George Poole, Cleaner, Dec. 15th to Dec. 31st, 1900.....					19.50	19.50
M. Steinbrenner, Temporary Asst. in Library.....	11.75	3.75		295.50		311.00
*M. Kingsbury, Temporary Asst. in Library, Jan. 1st to Apr. 21st, 1900.....				171.00		171.00
*M. Pier, Temporary Asst. in Library, May 8th to July 31st, 1900.....				138.89		138.89
I. Fredericks, Temporary Typewriter in Library.....	20.00	3.00		457.00		480.00
*O. Claussner, Temporary Office Asst., Jan. 1st to Feb. 2d, 1900.....		50.00				50.00
*M. Smallie, Temporary Typewriter, Feb., 2 weeks.....		18.00				18.00
*J. W. Barney.....	43.60					43.60
*O. J. Marstrand.....	5.00					5.00
Totals.....	\$3 379.26	\$6 148.59	\$1 575.00	\$4 188.84	\$995.85	\$16 282.54

* Not at present in employ of Society.

REPORT OF THE TREASURER.

In compliance with the provision of the Constitution, the Treasurer presents the following report for the year ending December 31st, 1900:

Balance on hand December 31st, 1899.....	\$13 728.36		
Receipts from current sources, January 1st to December 31st, 1900.....	51 495.28		
Received from sale of Historical Sketch.....	45.00		
Payment on audited vouchers for current business, January 1st to December 31st, 1900.....	\$45 338.82		
Payment on principal of Bond and Mortgage.....	10 000.00		
Balance on hand December 31st, 1900:			
In Union Trust Com- pany.....	\$4 597.24		
In Garfield National Bank.....	4 347.58		
In hands of the Treas- urer.....	985.00	9 929.82	
		<hr/>	<hr/>
		\$65 268.64	\$65 268.64
		<hr/>	<hr/>

Respectfully submitted,

J. M. KNAP,

Treasurer, Am. Soc. C. E.

NEW YORK, January 8th, 1901.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST.

(December 13th, 1900, to January 9th, 1901.)

NOTE.—This list is published for the purpose of placing before the members of the Society the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS.

In the subjoined list of articles references are given by the number prefixed to each journal in this list.

- (1) *Journal, Assoc. Eng. Soc.*, 257 South Fourth St., Philadelphia, Pa., 80c.
- (2) *Proceedings, Eng. Club of Phila.*, 1122 Girard St., Philadelphia, Pa.
- (3) *Journal, Franklin Inst.*, Philadelphia, Pa., 50c.
- (4) *Journal, Western Soc. of Eng.*, Monadnock Block, Chicago, Ill.
- (5) *Transactions, Can. Soc. C. E.*, Montreal, Que., Can.
- (6) *School of Mines Quarterly*, Columbia Univ., New York City, 50c.
- (7) *Technology Quarterly*, Mass. Inst. Tech., Boston, Mass., 75c.
- (8) *Stevens Institute Indicator*, Stevens Institute, Hoboken, N. J., 50c.
- (9) *Engineering Magazine*, New York City, 80c.
- (10) *Cassier's Magazine*, New York City, 25c.
- (11) *Engineering* (London), W. H. Wiley, New York City, 85c.
- (12) *The Engineer* (London), International News Co., New York City, 35c.
- (13) *Engineering News*, New York City, 15c.
- (14) *The Engineering Record*, New York City, 12c.
- (15) *Railroad Gazette*, New York City, 10c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Street Railway Journal*, New York City, 35c.
- (18) *Railway and Engineering Review*, Chicago, Ill.
- (19) *Scientific American Supplement*, New York City, 10c.
- (20) *Iron Age*, New York City, 10c.
- (21) *Railway Engineer*, London, England.
- (22) *Iron and Coal Trades Review*, London, England.
- (23) *Bulletin, American Iron and Steel Assoc.*, Philadelphia, Pa.
- (24) *American Gaslight Journal*, New York City, 10c.
- (25) *American Engineer*, New York City, 20c.
- (26) *Electrical Review*, London, England.
- (27) *Electrical World and Electrical Engineer*, New York City, 10c.
- (28) *Journal, New England Water-Works Assoc.*, Boston, 75c.
- (29) *Journal, Society of Arts*, London, England.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium.
- (31) *Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand*, Brussels, Belgium.
- (32) *Mémoires et Compte Rendu des Travaux*, Soc. Ing. Civ. de France, Paris, France.
- (33) *Le Génie Civil*, Paris, France.
- (34) *Portefeuille Economique des Machines*, Paris, France.
- (35) *Nouvelles Annales de la Construction*, Paris, France.
- (36) *La Revue Technique*, Paris, France.
- (37) *Revue de Mécanique*, Paris, France.
- (38) *Revue Générale des Chemins de Fer et des Tramways*, Paris, France.
- (39) *Railway Master Mechanic*, Chicago, Ill.
- (40) *Railway Age*, Chicago, Ill., 10c.
- (41) *Modern Machinery*, Chicago, Ill., 10c.
- (42) *Transactions, Am. Inst. Elec. Eng.*, New York City, 50c.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (44) *Journal, Military Service Institution*, Governor's Island, New York Harbor, 75c.
- (45) *Mines and Minerals*, Scranton, Pa., 20c.
- (46) *Scientific American*, New York City, 10c.
- (47) *Mechanical Engineer*, Manchester, England.
- (48) *Zeitschrift des Vereines Deutscher Ingenieure*, Berlin, Germany.
- (49) *Zeitschrift für Bauwesen*, Berlin, Germany.
- (50) *Stahl und Eisen*, Duesseldorf, Germany.
- (51) *Deutsche Bauzeitung*, Berlin, Germany.
- (52) *Rigasche Industrie-Zeitung*, Riga, Russia.
- (53) *Zeitschrift des oesterreichischen Ingenieur und Architekten Vereines*, Vienna, Austria.
- (54) *Den Tekniske Forenings Tidsskrift*, Copenhagen, Denmark.
- (55) *Ingeniören*, Copenhagen, Denmark.
- (56) *Teknisk Tidsskrift*, Stockholm, Sweden.
- (57) *Teknisk Ugeblad*, Christiania, Norway.
- (58) *Proceedings, Eng. Soc. W. Pa.*, 410 Penn Ave., Pittsburg, Pa., 50c.
- (59) *Transactions, Mining Institute of Scotland*, London and Newcastle-upon-Tyne.
- (60) *Proceedings, Western Railway Club*, 225 Dearborn St., Chicago, Ill., 25c.
- (61) *American Manufacturer and Iron World*, 59 Ninth St., Pittsburg, Pa.
- (62) *Minutes of Proceedings, Inst. C. E.*, London, England.

NOTE.—There are no references made in this month's list to German and Swedish periodicals.

LIST OF ARTICLES.

Bridge.

- Economical Steel and Masonry Highway Bridge Work at Rye, N. Y.* (13) Dec. 18.
 Swing-Bridges over the Weaver.* (11) Dec. 14.
 Raising the Boston Bridge near McKeesport, Pa.* (14) Dec. 15.
 Curves of Weight and Specifications for Electric Railway Bridges (13) Dec. 20.
 The Widening of London Bridge.* (12) Dec. 21.
 An Interlocking Mechanically Operated Draw Bridge Gate.* H. G. Tyrrell. (13) Dec. 27.
 Rebuilding of the Kinzua Viaduct.* (18) Dec. 29.
 Reinforcing and Rebuilding the Cornwall Bridge Piers.* (14) Dec. 29.
 Pont Roulant Electrique de 20 Tonnes de la Maison Ganz et Cie.* (33) Dec. 15.

Electrical.

- Electrical Measuring Instruments. J. Franklin Stevens. (24) Serial beginning July 16, ending July 23.
 The Operation of a Combined Lighting and Power Plant. J. H. Perkins. (26) Serial beginning Oct. 12, ending Oct. 19.
 The Electricity Works of Chèvres (Geneva).* (26) Serial beginning Oct. 12, ending Dec. 7.
 Alternating Current Laboratory Experiments and Commercial Tests. Fitzhugh Townsend. (6) Nov.
 On the Mechanical Forces in Dynamos Caused by Magnetic Attraction. B. A. Behrend. (42) Nov.
 The Plant of the St. Croix Power Co. of Wisconsin.* Henry Floy. (42) Nov.
 The Induction Motor. B. A. Behrend. (27) Serial beginning Nov. 3, ending Dec. 29.
 Incandescent Lamp Development to the year 1880.* Edwin W. Hammer. (27) Serial beginning Dec. 1, ending Dec. 15.
 Swansea Electric Tramways.* (26) Dec. 27.
 The Electrical Working of Main Line Railways. Ernest Kilburn Scott. (26) Dec. 7.
 The Pollak-Virág Telegraph.* Herr Pinter. (11) Dec. 7.
 On the Supersession of the Steam by the Electric Locomotive. W. Langdon. (26) Serial beginning Dec. 7, ending Dec. 14.
 Some Notes on the Design of Large Alternators.* A. Heyland. (26) Serial beginning Dec. 7, ending Dec. 21.
 Electric Power and Light for the Machine Shop and Foundry. Forrest R. Jones, M. Am. Soc. M. E. (13) Dec. 13.
 Leeds Tramway Plant.* (12) Dec. 14.
 Some Requisites of Modern Lighting Generator Sets. H. G. Reist. (27) Dec. 15.
 The Influences Exerted by Power Factor. F. H. Leonard, Jr. (24) Serial beginning Dec. 17, ending Dec. 24.
 Economy of the Application of Electricity in Collieries and Iron and Steel Works.* Ernest D. Phillips. (32) Dec. 21.
 Electric Haulage for Collieries.* Ernest Kilburn Scott. (22) Dec. 21.
 Electric Power Transmitted 153 Miles. (15) Dec. 21.
 Electrical Locomotives and Multiple-Driven Axles. Edward H. Tyler. (11) Dec. 21.
 Electrical Locomotives for Mine Haulage.* (22) Dec. 21.
 Electricity in Mines and Collieries.* J. E. Hodgkin. (22) Dec. 21.
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 De la Production et de l'Utilisation de l'Electricité. E. E. Stahl. (36) Serial beginning August 10, ending Oct. 10.
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- The Æsthetic Principles of Naval Architecture. (12) Serial beginning Sept. 28, ending Nov. 8.
 The Hamburg-American Liner *Deutschland*.* (11) Serial beginning Nov. 25, ending Dec. 28.
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- The Incandescent Gas Mantle and Its Uses. Vivian B. Lewes. (29) Serial beginning Oct. 19, ending Nov. 2.
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- The Economical Disposal of Town Refuse. Brierley Denham Healey. (47) Serial beginning July 14, ending July 25.
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- Steel: Its Properties and Tests. (26) Serial beginning Sept. 7, ending Oct. 19.
 Iron and Steel at the Paris Exhibition.* Prof. H. Bauerman. (47) Serial beginning Sept. 22, ending Oct. 20.
 Eliminating the Conflagration Hazard. Everett U. Crosby. (28) Dec.
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A Successful Siphon.* Robert S. Hale. (1) Nov.

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The Isthmian Canal Commission's Report. (14) Serial beginning Dec. 8, ending Dec. 15.

The Preliminary Report of the Isthmian Canal Commission. (13) Serial beginning Dec. 20, ending Dec. 27.

The Concrete Lock near St. Paul. (14) Dec. 22.

The New Hoboken Terminal of the North German Lloyd Line.* (14) Dec. 22.

Design for Controlling Works at the Head of the Chicago Drainage Canal.* (13) Jan. 3.

The New Fireproof Piers of the North German Lloyd Steamship Co., at Hoboken, N. J.* (13) Jan. 3.

The Engineering Works of the Suez Canal. (14) Jan. 5.

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NEW BOOKS OF THE MONTH.

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SPECIFICATIONS FOR STEEL BRIDGES.

(Taken from "De Pontibus.") By J. A. L. Waddell. Cloth, 7 x 4½ ins., 178 pp. New York, John Wiley & Sons, 1900. \$1.00.

There being a considerable demand for the specifications of "De Pontibus," the author and publishers of that work have printed the specifications, together with the tables and diagrams, separately from the other chapters. This was done that the specifications might be obtained at much less than the cost of the original treatise.

A few changes have been made in order to bring the specifications up to date. There is an index of twenty-two pages.

NOTES ON SOME EUROPEAN IRON-MAKING DISTRICTS.

A Collection of Letters to *The Iron Age*. By C. Kirchhoff. Boards, 9 x 6 ins., 113 pp., illus. (Donated by the Author.)

This is a series of letters embodying the results of observations made on visits to iron and steel plants in Germany, the Minette District of Lorraine, and England. It includes descriptions of the coal and iron supplies of those districts.

GEMEINFÄSSLICHE DARSTELLUNG DES EISENHÜTTENWESENS.

Herausgegeben vom Verein Deutscher Eisenhüttenleute in Düsseldorf. Cloth, 9 x 6 ins., 144 pp., illus. Düsseldorf, A. Bagel, 1901.

The Contents are: Part 1, Die Darstellung des Roheisens; Die Darstellung des schmiedbaren Eisens; Die Formgebungsarbeiten. Part 2, Das Eisengewerbe in den einzelnen Hauptländern.

FIELD MANUAL FOR ENGINEERS.

By Philetus H. Philbrick. Leather, 7 x 4 ins., 388 pp. New York, John Wiley & Sons, 1901. \$3.00. (Donated by the Author.)

The preface states that the aim in this work has been: First, To present the subjects of the text in a mathematical and logical order. Second, To classify all problems presented so as to be easily referred to. Third, Especial care has been taken to express the resulting formula of every problem in the form requiring the least numerical computation. Fourth, To furnish a large number of useful tables, more complete, more extended, and, where possible, with more elementary and appropriate arguments than other similar tables possess. Fifth, To treat the general problems of Railway Engineering more extensively than other similar works have done.

The headings of chapters are: Preliminary Operations; Adjustments, Use, and Care of Instruments; Plane Trigonometry; Simple Curves Connecting Right Lines; Leveling, Stadia Measurements, etc.; Compound Curves; Reversed Curves; Turnouts; The True Transition Curve; Calculation of Earthwork; Approximate and Abridged Computations; Construction; Explanation of Tables and Miscellaneous Topics; Tables. There is an index of three pages.

STREET RAILWAY ROADBED.

By Mason D. Pratt, Assoc. M. Am. Soc. C. E., and C. A. Alden, Assoc. M. Am. Soc. C. E. Cloth, 9 x 6 ins., 135 pp., illus. New York, Street Railway Publishing Company, 1898. \$2.00. (Donated by the Authors.)

The authors state that the subject-matter of this book is mostly made up from contributions to the *Street Railway Journal*, *Engineering News* and *Proceedings*, Am. Soc. C. E. It is not supposed to cover the entire field of street railway track construction, but to present in compact form the main points of the best practice of to-day. The headings of chapters are: Early Types of Rails; The Development of the Girder Rail; What Governs the Shape of Rails; The T-Rail Adapted to Street Railways; Track Fastenings and Joints; Special Work; Guard-Rails; Advantages of Spiral Curves and Tables for Same; Design of Special Work; Surveys and Laying Out Work; Specifications; Index.

WATER POWER;

An Outline of the Development and Application of the Energy of Flowing Water. By Joseph P. Frizell, M. Am. Soc. C. E. Cloth, 9 x 6 ins., 563 pp., illus. New York, John Wiley & Sons, 1901. \$5.00. (Donated by the Author.)

The author states that this is in no sense an elementary work. It assumes the reader to be possessed of elementary notions of mechanics and mathematics. The work does not attempt to go much into constructive details. It directs the reader's attention to the principles involved in the design, and the results to be aimed at. The contents are: Natural Watercourses; Dams for Water-Power; Construction of Dams; Dams of Masonry; Appendages of Dams; Movable Dams; Storage Reservoirs and Reservoir-Dams; Rock-Fill Dams; Reservoir-Dams of Masonry; Examples of High Dams; Failures of High Dams; Canals, Gates, etc.; Hydraulic Motors; Water-Wheels; Turbines; Appendages and Attachments of Turbines; Canals; Development of Natural Water-Powers; Transmission of Power; Shafting and Wire Rope; Hydraulic Transmission; Transmission by Compressed Air; Transmission by Electric Current; The Power-House; Measurement of Water; Storage and Pondage of Water; Damages to Mill-Owners Resulting from the Diversion of Water.

MEMEL-, PREGEL- UND WEICHELSTROM, IHRE STROMGEBIETE UND IHRE WICHTIGSTEN NEBENFLÜSSE.

Eine hydrographische, wasserwirthschaftliche und wasserrechtliche Darstellung. Auf Grund des Allerhöchsten Erlasses vom 28. Februar, 1892, im Auftrage des preussischen Wasser-Ausschusses herausgegeben von H. Keller, Geheimer Baurath, Vorsteher des Bureau des Ausschusses. Cloth, 6 vols., 11 x 7 ins. (atlas, 21 x 18). Berlin, Dietrich Reimer, 1899. (Donated by P. Glasenapp.)

The Contents are: Vol. 1, Stromgebiete und Gewässer; Vol. 2, Memel und Pregelstrom; Vol. 3, Weichselstrom in Schlesien und Polen; Vol. 4, Weichselstrom in Preussen; Vol. 5, Tabellen; Vol. 6, Kartenbeilagen.

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PRUETT, WILLIAM ELISHA, Asst. Eng., Waddell & Hedrick, 664 Gibraltar Bldg., Kansas City, Mo.....	Dec. 4, 1900
THOMSON, ALEXANDER, Jr., 517 Lexington Ave., Brooklyn, N. Y.....	Dec. 4, 1900
VAN LOAN, SETH MORTON, Catskill, N. Y.....	Dec. 28, 1900

RESIGNATIONS.

ASSOCIATE MEMBER.

Date of
Resignation.

MITCHELL, EDWIN.....	Dec. 28, 1900
----------------------	---------------

JUNIOR.

FOUQUET, LOUIS DOUGLAS.....	Dec. 28, 1900
-----------------------------	---------------

DEATHS.

DORSEY, EDWARD BATES.....	Elected Member, June 4, 1879; date of death unknown.
MERIWETHER, NILES.....	Elected Member Nov. 1, 1871; died Dec. 28, 1900.
STARLING, WILLIAM.....	Elected Member Sept. 7, 1887; died Dec. 11, 1900.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

INSTITUTED 1852.

PROCEEDINGS.

NOTE.—This Society is not responsible, as a body, for the facts and opinions advanced in any of its publications.

SOCIETY AFFAIRS.

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MINUTES OF MEETINGS.

OF THE SOCIETY.

FORTY-EIGHTH ANNUAL MEETING.*

January 16th, 1901.—The meeting was called to order at 10.20 A. M. President John F. Wallace in the chair; Charles Warren Hunt, Secretary; and present, also, 255 members and 20 guests.

Messrs. William B. Fuller, Oscar Erlandsen and Oscar Lowinson were appointed tellers to canvass the Ballots for Officers for the ensuing year.

On motion, the reading of the minutes of the meeting of January 2d, 1901, was dispensed with.

The Annual Report† of the Board of Direction for the year ending

*A full report of the Forty-eighth Annual Meeting is printed on pages 31 to 64 of this number of *Proceedings*.

†See pages 5 to 14, January, 1901, *Proceedings*, for the Annual Reports of the Board of Direction, the Secretary and the Treasurer.

December 31st, 1900, and the Annual Reports of the Treasurer and of the Secretary were presented, and, on motion, duly seconded, accepted.

The Secretary reported that, in accordance with the recommendations of the Committee on Prizes, the Board of Direction has awarded the prizes for the year ending with July, 1900, as follows:

The Norman Medal to James A. Seddon, M. Am. Soc. C. E., for Paper No. 871, entitled "River Hydraulics."

The Thomas Fitch Rowland Prize to Allen Hazen, M. Am. Soc. C. E., for Paper No. 872, entitled "The Albany Water Filtration Plant."

The Collingwood Prize for Juniors to Robert P. Woods, Jun. Am. Soc. C. E. (now Assoc. M. Am. Soc. C. E.), for Paper No. 853, entitled "Street Grades and Cross-Sections in Asphalt and Cement."

The consideration of the following proposed amendment to the Constitution was then taken up:

"Amend Section 5 of Article II by adding the following:

"The Board of Direction may transfer any Junior elected prior to March 4th, 1891, to the grade of Associate."

This amendment was proposed by Messrs. George S. Morison, S. Whinery, Joseph M. Knap, John Bogart and C. C. Schneider.

The amendment was not amended.

The following were appointed members of the Nominating Committee for two years:

IRA A. SHALER.	Representing District No. 1.
S. E. TINKHAM.	" " " 2.
JOHN F. ALDEN.	" " " 3.
PAUL L. WOLFEL.	" " " 4.
ONWARD BATES.	" " " 5.
R. MONTFORT.	" " " 6.
CHARLES D. MARX.	" " " 7.

The Secretary read a letter from T. Kennard Thomson, M. Am. Soc. C. E., inviting members to inspect the work on the pneumatic foundations for the Mutual Life Building.

George F. Swain, M. Am. Soc. C. E., Chairman of the Committee on the Proper Manipulation of Tests of Cement, presented a progress report, and suggested that as the Committee had lost one of its members by resignation, it might be well to increase the number of members on that Committee.

On motion, duly seconded, the Committee was empowered to increase its number if it so desires.

The Secretary announced additional details of the programme of the various excursions, etc.

The Secretary presented the report* of the tellers appointed to canvass the Ballot for Officers for the ensuing year.

* This report is printed on page 58 of *Proceedings*. The minutes of the meeting in full are printed on pages 81 to 84, *Proceedings*.

The President announced the election of the following officers:

President, to serve one year:

J. JAMES R. CROES, New York City.

Vice-Presidents, to serve two years:

HENRY S. HAINES, New York City.

GEORGE H. BENZENBERG, Milwaukee, Wis.

Treasurer, to serve one year:

JOSEPH M. KNAP, New York City.

Directors, to serve three years:

District No. 1.—JOSIAH A. BRIGGS, New York City.

District No. 2.—GEORGE F. SWAIN, Boston, Mass.

District No. 3.—EMIL KUICHLING, Rochester, N. Y.

District No. 4.—MORDECAI T. ENDICOTT, Washington, D. C.

District No. 5.—EDWARD C. CARTER, Chicago, Ill.

District No. 5.—FRANK C. OSBORN, Cleveland, Ohio.

Mr. Croes, President for 1901, was introduced by Mr. Wallace, and took the chair.

Adjourned.

February 6th, 1901.—The meeting was called to order at 8.50 p. m. President J. James R. Croes in the chair; Charles Warren Hunt, Secretary; and present, also, 60 members and 7 guests.

The minutes of the meeting of January 2d, and of the Annual Meeting on January 16th, 1901, were read by the Secretary, and approved.

A paper by Charles L. Crandall, M. Am. Soc. C. E., entitled, "The Adjustment of a Transit Survey as Compared with that of a Compass Survey," was presented by the Secretary, who also read a communication on the subject from Mr. George W. Tuttle.

The paper was discussed orally by Messrs. J. H. Fuertes, W. H. Luster, Jr., and W. B. Lee.

Ballots were canvassed, and the following candidates were declared elected:

AS MEMBERS.

JULIUS BAIER, Virginia City, Mont.

BENJAMIN WILDER GUPPY, Portland, Me.

BENJAMIN MORTIMER HALL, Atlanta, Ga.

EUGENE KLAPP, New York City.

AMBROSE VINCENT POWELL, Chicago, Ill.

DAVID ALEXANDER WATT, Bowling Green, Ky.

CYRUS JOHN RICHARD WILLIAMS, Brisbane, Queensland.

AS ASSOCIATE MEMBERS.

WILLIAM ANDREW ALLEN, Perth Amboy, N. J.
WILLIAM ISRAEL BISHOP, Montreal, Que.
EDWIN STANTON FICKES, Pittsburg, Pa.
EDWARD MCKIM HAGAR, Chicago, Ill.
ALLEN CROSBY HARDISON, Santo Domingo Mines, Peru.
GEORGE PRINCE HAWLEY, Shawenegan Falls, Que.
WALLACE CHITTENDON LYON, Washington, D. C.
SAMUEL DICKERSON ROCKENBACH, Santiago, Cuba.
GEORGE ALBERT SOPER, New York City.

The Secretary announced that the following candidates were elected by the Board of Direction on February 5th, 1901:

AS ASSOCIATE.

GEORGE OLIVER TENNEY, Spartanburg, S. C.

AS JUNIORS.

GEORGE WASHINGTON CORRIGAN, Evanston, Wyo.
GEORGE GERE MACCRACKEN, New York City.
CHARLES HERBERT NUTTER, New York City.
FRANCIS REPETTI WELLER, Washington, D. C.

The Secretary announced that at the meeting of the Board of Direction, February 5th, 1901, the ballot on the reconsideration of JAMES HOLLIS WELLS was canvassed, and that Mr. Wells was declared elected as a member.

The Secretary announced the acceptance of the following resignations:

WILLIAM JOHNSTON SPROULE, elected Member, September 1st, 1886.
JOHN JAY LAFAYETTE HOUSTON, elected Associate Member, May 4th, 1892.
WALTER GRANT PENFIELD, elected Junior, March 3d, 1896.

Adjourned.

February 20th, 1901.—The meeting was called to order at 8.35 p.m.; President J. James R. Croes in the chair; Charles Warren Hunt, Secretary; and present, also, 72 members and 13 guests.

A paper, entitled "The Construction of Gravity Sand Filters at Nyack, N. Y.," by G. N. Houston, Assoc. M. Am. Soc. C. E., was presented by the Secretary, who also read a communication on the subject from James S. Haring, M. Am. Soc. C. E.

A written discussion of the paper by James H. Fuertes, M. Am.

Soc. C. E., was presented by F. S. Skinner, M. Am. Soc. C. E., and the subject was discussed further by Messrs. L. L. Buck, Gustave Kauffman, James Owen, M. Knowles and R. A. MacGregor.

The Secretary announced the following deaths:

LEVIS PASSMORE PENNYPACKER; elected Associate Member April 1st, 1891; died January 30th, 1901. GEORGE WASHINGTON HOWELL; elected Member May 2d, 1888; died February 15th, 1901.

Adjourned.

OF THE BOARD OF DIRECTION.

(Abstract.)

January 16th, 1901.—3 P. M.—President Croes in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Briggs, Hering, Knap, O'Rourke, Osborn, Ricketts, Seaman, Swain, Turner, Wallace and Whinery.

The President was authorized to appoint and announce later the Standing Committees.

On the recommendation of the Finance Committee, the payment of five thousand dollars (\$5 000) on the principal of the mortgage debt was authorized.

A letter-ballot was ordered for the election of a Secretary for the ensuing year.

Adjourned to meet February 5th, 1901.

February 5th, 1901.—8.40 P. M.—President Croes in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Briggs, Hering, Knap, Noble, O'Rourke, Ricketts, Seaman, Swain, Turner and Whinery.

The appointment of the following Standing Committees was reported:

Finance Committee: S. WHINERY, *Chairman*; C. W. BUCHHOLZ, JOSIAH A. BRIGGS, GEORGE H. BENZENBERG, GEORGE F. SWAIN.

Publication Committee: RUDOLPH HERING, *Chairman*; PALMER C. RICKETTS, JOHN F. O'ROURKE, JAMES D. SCHUYLER, ALFRED NOBLE.

Library Committee: JOHN A. BENSEL, *Chairman*; HENRY S. HAINES, EMIL KUIOHLING, MORDECAI T. ENDICOTT, CHARLES WARREN HUNT.

Ballots in the matter of the election of a Secretary were canvassed, with the following result: That twenty-six ballots in all were received, all in favor of Charles Warren Hunt for Secretary.

The President declared Charles Warren Hunt elected Secretary of the Society.

The matter of members in arrears for dues was considered and action taken.

The matter of the presentation of papers by abstract and the securing of such abstracts from authors was considered, and authority given to the Committee on Publications to take action in regard to abstracts of papers as it may deem advisable.

Ballots on the reconsideration of the vote by which James Hollis Wells was rejected were canvassed, and Mr. Wells was elected a Member of the Society.

Resignations were received and accepted from one Member, one Associate Member and one Junior.

It was decided that hereafter the Library of the Society shall not be opened on July 4th, Thanksgiving Day, and Christmas Day.

Applications were considered and other routine business transacted.

One candidate for Associate and four for Junior were elected.

Adjourned.

REPORT IN FULL OF THE FORTY-EIGHTH ANNUAL MEETING, JANUARY 16th and 17th, 1901.

Wednesday, January 16th, 1901.—The meeting was called to order at 10.20 A. M.; John F. Wallace, President, in the chair; Charles Warren Hunt, Secretary. Meeting called to order.

The **PRESIDENT**.—Gentlemen, will you please come forward and take front seats? The first thing in order is the reading of the minutes of the meeting of January 2d, 1901. The minutes of that meeting, in accordance with custom, will be printed in the *January Proceedings*, and will come up in due course for action at the meeting of February 6th, 1901. In view of this fact, the reading of those minutes will be dispensed with, provided there is no objection. Minutes of Last Meeting.

Next in order is the appointment of Tellers to canvass the vote for officers for the ensuing year. I will appoint Mr. William B. Fuller, Mr. Oscar Erlandsen and Mr. Oscar Lowinson. These gentlemen will find the ballots in the other room, and the clerical force will assist them in the count, which will go on at once, although the ballot does not close until twelve o'clock, noon. Tellers Appointed.

Any ballots that come in between now and twelve o'clock will be counted before the final result is announced.

The next thing in order is the report of the Board of Direction. The Secretary will read it.

The Secretary read the report of the Board of Direction.*

The **PRESIDENT**.—I would like to ask the indulgence of the Society to make a few remarks in relation to this report before asking you what you shall do with it. One thing that has struck me most forcibly during the last year is in regard to admissions into the Society, and the elements that enter into the question of the rejection of applicants. We should, of course, guard the portal to our organization with the utmost care, and see that none but those who are worthy should enter. On the other hand, we should avoid any action as an organization, or as individual members of the Society, which unnecessarily keeps out men who are worthy. The Membership Committee and the Board of Direction give a most careful scrutiny to every applicant whose name appears on the Blue List before the ballot is sent out. It is the duty of every member to inform the Board if there is any reason why any candidate is not worthy of membership. The character of the negative votes that come in is at times very peculiar. A great many times men are voted against by quite a number of members, and when the notice of a proposed reconsideration of the ballot is sent out, these men do not come forward and state their reasons for so voting. Would you ask any stronger proof that in those Report of the Board of Direction.

* See *Proceedings*, Vol. xxvii, p. 5 (January, 1901).

Discussion on
Report of the
Board of
Direction.

cases the negative votes have been made on personal grounds, personal prejudice, or have been ill-considered? In the West, among a great many engineers with whom I am acquainted, some of them men that have had years of experience, are fully qualified, and would make desirable members, I have frequently, in calling their attention to the fact that they should connect themselves with our Society, been met with the response that their record was long and that they did not propose to subject themselves to the chance of being black-balled by men who had worked for them and had left their service; men from whom they had differed radically in opinion, and men from whom they might expect action of that sort. We should never permit our Society to take such action as would make it hard for an engineer with a record, and who is thoroughly qualified, to be admitted. Among the peculiar features of some of the ballots that we have lately received, I will mention one in particular. There was quite a number of names on the ballot, and the record of each of the first five or six names on that list occupied about $1\frac{1}{2}$ or 2 ins. of space. At the foot of the list was a man whose record occupied 5 or 6 ins. One member voted no against every one of the applicants with the short records, and in favor of the one with the long record. It looked very much as if this individual member had sized up the records of the applicants by the inch. And this is not an isolated case; it is simply a sample of the way a great many of our members act in relation to this question of balloting. Now such things are beneath the dignity of our profession and beneath the dignity of this Society. I have not spoken to you too strongly on this subject; but it has been one of the things that has attracted my attention in the meetings of the Board of Direction more than any one thing.

What action will the Society take on this report?

E. SHERMAN GOULD, M. Am. Soc. C. E.—Mr. Chairman, if it is in order to make any remarks in the line which you have indicated, I would say—

The PRESIDENT.—The first thing in order would be a motion to accept the report.

Mr. GOULD.—I beg your pardon.

ROBERT CARTWRIGHT, Vice-President, Am. Soc. C. E.—I move that the report be accepted. (Seconded.)

The PRESIDENT.—It is moved and seconded that the report be accepted. Any remarks? Now we will hear you.

Mr. GOULD.—I heartily agree with the view which our President has announced, and I think with him that every one who casts a negative vote should be prepared to state distinctly over his signature what his reasons are. I have myself cast two negative ballots since I have been a member of the Society; one a negative ballot after an inspection of the Blue List, and one a negative ballot on a reconsideration ballot.

They were both cast for the simple reason that the printed record in the Blue List did not come up to the constitutional requirements of membership. Counting up the dates, the time was not fulfilled; and counting up the record, that was not fulfilled. Those were the only two reasons, and I can imagine no other reason why a negative ballot should be cast against a proposed member except those reasons, and personal reasons—that is to say, something against the personal character of the applicant as an engineer and a gentleman. I have been surprised to see, as I dare say a number of our members have been, the great number of reconsideration ballots, and in view of the fact that the constitutional requirements for membership are so explicit and so capable of practical application, I cannot imagine why such a large number of reconsideration ballots come up, why so many negative votes are cast; except it be, as the Chairman has said, for personal reasons or from the fact which influenced my own decision. Either I have entirely misinterpreted the plain language of the Constitution, or we have repeatedly had applicants received and admitted to the Society whose records did not fulfill the constitutional requirements of membership in the class to which they were elected.

The PRESIDENT.—Gentlemen, in addressing the Chair, will please follow our usual custom of giving their names when they rise.

FOSTER CROWELL, M. Am. Soc. C. E.—Mr. President, this is a matter that goes very much further than the effect on a candidate, no matter how mischievous that effect on a candidate may be. It affects the stability, the importance of the Society in coming years. The Society is now so large that the present method of electing by ballot is no longer useful. It used to be, when the membership was smaller and when the candidates who came up were more generally known to the membership than is the case at present. It seems to me that there is only one remedy for this condition which the President has described, and that is a constitutional amendment putting the election of candidates in the hands of the Board after the same opportunities for acquiring information in regard to them as now prevails have been given to the members of the Society.

SAMUEL WHINERY, Director, Am. Soc. C. E.—As our President has indicated, the Board of Direction of the Society has given this question a good deal of consideration. I may say that it went so far as to appoint a committee to consider the whole subject and to report to the Board. As has been said, it is not a very easy question to deal with. I believe that upon a very careful consideration of all the conditions, most members will come to the conclusion that it is desirable to retain, at least, under the present constitutional form of electing members, that clause which allows a small number of negative votes to reject. It is perfectly conceivable that there may be instances—in fact I know of one myself in the history of the Society, where a man

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(continued).

who had been guilty of unworthy acts, known only to a subordinate, was an applicant for membership in this Society. That subordinate was a member. His bread and butter depended upon his position. He could not very well publicly—he could not take the risk, even in a confidential letter to the Board of Direction—to point out why his superior was unfit to be a member of the Society. There was only one thing left for him to do under those circumstances, and that was to take advantage of the clause in the Constitution which allows a small number of negative votes to reject. Now there may be other similar circumstances. I believe that until at least such a sweeping change in the Constitution as Mr. Crowell points out shall be made, it is desirable to retain this provision of the Constitution allowing a small number of votes to reject. But at the same time, as our President has pointed out—and I do not wish to go over the same ground—there are not many engineers who have attained some degree of eminence in the profession, who have had a large amount of experience, who are men of positive character, such men as we wish to become members of the Society, who have not been so unfortunate at some time in their professional life as to make some enemies; and, unfortunately, those enemies are not always guided by the highest sense of honor when it comes to balloting for the admission of members. I think if members before casting a negative ballot would consider the subject very thoroughly, that on the basis, not only of personal honor, but of professional honor, they would never allow merely personal motives, of hatred or professional difference, to govern their action in casting ballots for membership, and I think that that is the point which it is desirable to insist on—that no man who is worthy to be a member of the American Society of Civil Engineers, who is a gentleman and an honorable member of the profession, can cast a ballot against another honorable member of the profession simply for personal reasons. I think that point of view has to be impressed. The method at present provided for excluding unworthy members is ample, as our President has pointed out, and the Board, as he has also said, has been exceedingly careful not to admit members against whom there is any valid charge or any valid ground for rejecting. It may be interesting to the Society at large to know that in some cases an application for membership has been held up for more than a year because of a comparatively trivial charge by one member of the Society, until that charge could be very thoroughly investigated and either substantiated or disproved. I think, as the Board stands now—if you will pardon me for saying so—and as it has been for many years, members of the Society are perfectly safe in confiding any reasons of that character they may have to the Board, and I think they are further perfectly safe in counting that the Board will deal in the most careful manner, will give the fullest consideration to any communication of that kind, and I think if the matter is pres-

ented in that way members will find very few unworthy people are admitted to the Society. Of course, the Board of Direction does not know, perhaps, one out of a hundred of these applicants. They must depend upon the information they obtain from the membership at large in order to act intelligently upon the applications.

Mr. CARTWRIGHT.—Only to reinforce the remarks of our President and our friend Whinery—if the members of the Society knew the care that is taken by the Board of Direction in the examination of candidates, they would feel well satisfied that the subject might be left to the Board. I never have cast a negative ballot. If a man proves by his record, so far as published, to be qualified and also is endorsed by worthy members of the Society, I vote for him. But, as the President justly says, this pink ballot business comes back pretty often now. The only thing I could suggest is that, when these negative votes come in, the Board of Direction demand of those casting the negative votes to know the reason why. Face the music. Come out and say what you have got to say. That is one remedy that the Board of Direction can enforce. As the President has justly said, when it comes to the pink ballot, those that voted negatively on the first application do not come forward with anything, but let it go by default. The vote is a good deal like an anonymous letter, which no man but a coward will ever write. I think you may well leave it in the hands of the Board of Direction. If you had been in the Board of Direction and knew the facts, I think you would say that whoever the Board of Direction passes is worthy of our Society. This is based upon a good many years' connection with the Society. Of course, our Society has grown beyond what anybody ever dreamed it would be. At the same time, we have a safeguard in the fact that the Board of Direction can demand the reasons why you voted no.

The PRESIDENT.—Are there any further remarks, gentlemen, on this question?

MENDES COHEN, Past-President, Am. Soc. C. E.—Mr. President, I would like to say a word on the subject. It is a matter which I have observed for a long while, and even as long ago as when I was a member of the Board, the same difficulty would come up. It grows out of the fact, as has been said, that, with the extended membership in the Society at present, a negative vote is so entirely concealed and may be made so effective that members can satisfy their personal spite; and a good deal of this negative voting is due to that, I have no doubt. There is but one remedy for this, in my opinion. It is not in educating up the members to do the fair and honorable thing. Those that are capable of such an appeal will do the proper thing now. It can only be met by putting the election into the hands of the Board, where I have long thought it properly belonged. It may be well in an amendment to the Constitution, looking to such change in the method, to

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(continued).

practically increase the Committee on Membership by adding representative members, selected by the Board, with the consent of the member from each and every district; and when objections are made to individuals from such district or such location, it may be well to refer to the member from that locality—the member of the Membership Committee—and the additional member of the Membership Committee in that locality can canvass on the spot, as near as may be, the reputation and standing of the candidate. With such information, the Board is in the best possible position to pass upon the merits of the candidate, and certainly far better able to give a satisfying result to the Society at large than can the secret ballot.

The PRESIDENT.—There is one very pertinent idea in connection with Mr. Cohen's remarks, and that is the bringing of the far-away and the non-resident membership into a responsible connection with the Society in reference to action on applications for memberships would very much strengthen and tie our Society together. The Institution of Civil Engineers of Great Britain, I believe, has now adopted a similar plan. I think in some of their colonies, particularly in Canada, they have advisory councils, that are made up of the non-resident members, to whom applications are referred that come from that colony or that territory. The one strength of our Society in the future must be through its non-resident membership, through a large non-resident membership. Those men must be brought into touch with our Society work. It is impossible for them to take part in the monthly meetings regularly. They, of course, receive our publications, and most of them realize the burden that is put upon the resident members to carry on the business of the Society; but they should be brought in touch, as much as possible, with the work of the Society, and this is one way in which it could be done.

Are there any further remarks?

W. B. LEE, M. Am. Soc. C. E.—Mr. President, there are two points to which I would like to call attention. The first is in regard to what Mr. Gould has just said concerning his manner of arriving at a decision as to whether he should vote for a candidate or not, and he says that he carefully considered whether the man's record was sufficient to fill the constitutional requirements. Now, I understand that is a matter that is considered by the Board of Direction before the Blue List and before the ballot is issued, and that, upon the face of it, the record, in their judgment, does come up to the constitutional requirements. That, it seems to me, would be sufficient.

With regard to another point I have been credibly informed that there is a small portion of the membership of the Society that believes that the Constitution is a little lame and that a man should be forty years of age instead of thirty in order to be a full-fledged member of

the American Society of Civil Engineers. I do not know whether that is true or not.

The PRESIDENT.—That is all right for those of us that are in. (Laughter.)

While not desiring to digress, there is another feature of the application for membership. In the Institution of Civil Engineers of Great Britain, a man is not permitted in his application to signify the class that he desires to be placed in. As I understand it, he applies for membership in the Society, and it remains with the Board of Direction to say whether he shall be a full member or an associate member, or classify him where he properly belongs. Of course the Board must exercise a great deal of discretion, particularly with reference to that qualification which is designated as "responsible charge of work." In regard to age, or in regard to length of experience, that is a matter that is very easily checked; but except by an acquaintance with a man, or by correspondence with his endorsers, it is very difficult sometimes to determine whether a man is qualified or not, and a great many times the men who are more modest than others will word their record in such a way that it will look inferior to that of a man who has a stronger imagination (laughter) or an ability to place his record in a better light.

Any further remarks? If not, all in favor of the acceptance of the report of the Board of Direction will signify by saying Aye; contrary, No.

The motion was carried.

The PRESIDENT.—It is accepted. The next in order is the report of Treasurer's Report.

Mr. J. M. Knap read the report of the Treasurer.*

The PRESIDENT.—Is there a motion to accept this report?

Mr. CARTWRIGHT.—I move that the report be accepted.

(Seconded.)

The motion was carried.

The PRESIDENT.—The report of the Treasurer is accepted. Next in order is the report of the Secretary.

Mr. Charles Warren Hunt, the Secretary, read his report.†

Secretary's Report.

The PRESIDENT.—Gentlemen, what do you desire to do with this report?

A MEMBER.—I move that it be received. (Seconded.)

The motion was carried.

The PRESIDENT.—The Report of the Board of Direction on the Award of the Norman Medal and the Rowland Prize is next in order.

The Secretary read the following Report:

* See *Proceedings*, Vol. xxvii, p. 14 (January, 1901).

† See *Proceedings*, Vol. xxvii, p. 10 (January, 1901).

DECEMBER 22D, 1900.

Report of
Committee on
Award of
Prizes.

To the Board of Direction,

AMERICAN SOCIETY OF CIVIL ENGINEERS.

The Committee to recommend the award of prizes for the year ending July, 1900, respectfully reports the following recommendations:

That the Norman Medal be awarded to James A. Seddon, M. Am. Soc. C. E., for his paper entitled "River Hydraulics" (No. 871).

That The Thomas Fitch Rowland Prize be awarded to Allen Hazen, M. Am. Soc. C. E., for his paper entitled "The Albany Water Filtration Plant" (No. 872).

That The Collingwood Prize for Juniors be awarded to Robert P. Woods, Assoc. M. Am. Soc. C. E., for his paper entitled "Street Grades and Cross-Sections in Asphalt and Cement" (No. 853).

The Committee calls attention to the fact that this paper was written, published and discussed prior to Mr. Woods' transfer to the grade of Associate Member.

Respectfully submitted,

JOSEPH MAYER,
ARTHUR N. TALBOT,
S. E. TINKHAM.

The SECRETARY.—I have to report that the Board of Direction has awarded the prizes in accordance with the recommendations of the Committee.

The PRESIDENT.—No action is necessary on this Report. It is simply for the information of the Society.

Proposed
Amendment
to the
Constitution.

There is a proposed amendment to the Constitution to be considered at this meeting. The Constitution states as follows:

"Such amendments shall be in order for discussion at such Annual Meeting, and may be amended in any manner pertinent to the original amendments by a majority vote of the Annual Meeting, and if so amended shall be voted upon by letter-ballot in form as amended by the Annual Meeting; if not so amended, they shall be voted upon by letter-ballot as submitted. The vote to be counted at the first regular meeting in March."

The proposed amendment reads as follows:

"Amend Section 5 of Article II by adding the following: 'The Board of Direction may transfer any Junior elected prior to March, 1891, to the grade of Associate.'"

Proposed by George S. Morison, S. Whinery, Joseph M. Knap, John Bogart and C. C. Schneider.

Before opening this for general discussion, I would like to call the attention of the Society to the last paragraph of Section 6 in relation to Junior membership. It says:

"Persons who are in the Junior class at the time of the adoption of this Constitution shall not have their status changed by the provisions of this section."

While it is true that we have the power to amend our Constitution, it is also true that that clause of that Section of Article II seems to me to be in the nature of a contract which we entered into with those

who were Junior members at the time this Constitution was adopted. Now it is a question on which I am not clear, whether, while we may technically have the power to change that clause, we have the moral right to do so. Now, of course, the members of the Society have to judge of that themselves. I simply consider it my duty to call your attention to that phase of the question. The motive, of course, of this amendment is a very proper one, and that is the desire to eliminate from our Junior membership men that have been in that class a great many years and who are perfectly qualified, or should be qualified by this time, to go into a higher class. But it is a question whether we can or should amend the Constitution so as to force them into a higher class without their own consent. It would seem, however, that with their consent it would be perfectly proper to do it. The matter is now open for general discussion.

J. M. KNAF, M. Am. Soc. C. E.—Is this matter of the amendment before the house?

The PRESIDENT.—The matter is now before the house.

Mr. KNAF.—I wish to say, Mr. Chairman and gentlemen, that I signed that amendment without feeling that I wanted it to be passed just exactly in that shape. But the gentleman who asked me to sign it said it would be brought up for consideration at this meeting and, of course, could be amended. I therefore signed it as it went out, feeling no harm would be done, and I take the occasion, sir, now to move an amendment to that amendment which I will read and which can be discussed. The amendment that I propose is this: Strike out the final sentence of Section 6 of Article II (that is the Article you referred to, sir, in your speech just now) as follows: "Persons who are in the Junior class at the time of the adoption of this Constitution shall not have their status changed by the provisions of this Section." That I propose to have stricken out and substitute therefor the following:

"Persons who became Juniors on or before the date of the adoption of this Constitution may be transferred to other classes of membership by the Board of Direction. Until so transferred, they shall continue to be Juniors."

I would simply say here that we have discussed it in the Board, and letters have been sent out to all of those we call the old Juniors on the subject of having them transferred, say, to the grade of Associate, and replies were received from many of them not objecting. Others did object. Others objected very decidedly to being transferred to that grade. Therefore, it was afterwards decided by the Board that an amendment of this kind should be sent out to be voted upon. It seems to me that these Juniors, some of them now 40 or 50 years of age, would be only too glad to be transferred to some other grade of membership, and in this way it can be done by the Board of Direction. They can vote on it understandingly, and no harm will be done, and

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none of the rights of Juniors are taken away, I think, by the adoption of the amendment which I propose.

The PRESIDENT.—Is there any second to Mr. Knap's amendment to the original amendment?

Mr. WHINERY.—Mr. President, in seconding the amendment proposed by Mr. Knap, I wish to say I am very sorry that the member, who is a prominent member of the Society, who originally took this matter up and investigated it and who has been the strongest advocate of it, is not here to-day, and I should like to present very briefly the arguments that he thinks are sufficient to warrant the adoption of some amendment of this character. This class is an anomalous class in the Society, and a very small class, and for that reason alone it would be desirable to eliminate that class if it could be done in a satisfactory manner. As has been stated here, some of these Juniors who were elected Juniors previous to the adoption of this Constitution are now gentlemen, not only mature in age, but prominent in their branches of the profession. Among other things in the Society we have a prize offered to Junior members for the best papers produced. Now it is argued that it is hardly fair to place Juniors, under the age of thirty, in competition with men of forty, or fifty, or sixty years, who have reached advanced positions in the profession, who are men of known ability. Very probably such Juniors would not compete for the Junior prize, but they might, and this gentleman thought that it was a case which demanded action on the part of the Society. I may say further, without any violation of confidence, that he gave a good deal of consideration to the legal question that was raised by our worthy President, and he came to the conclusion that the Society had an undoubted right, legal and moral, to make this transfer. I say this on behalf of the gentleman, although I am not personally prepared to advocate the amendment very strongly.

Mr. CROWELL.—Mr. Chairman, there is a confusion, I think, in this matter, because the classification of Junior before the adoption of this Constitution was decidedly different from the classification of Junior at the present time. At the time this Constitution was adopted the clause which has been referred to was inserted in order to avoid the infringement of the rights of the class of Juniors that had been elected previously under the old Constitution. In my judgment, sir, we have no legal right to make any change in this matter. It is a right that has been secured to those men who came in under a certain classification, which was a higher classification, as I remember it, than the classification for Juniors at the present time; and we are bound in honor, as well as legally, in my judgment, to adhere to that contract. Besides that, it does not seem to me that there is any expediency in it. This is a very small class; it is an anomalous class, but it grew out of the condition of changing the classification of Juniors. I think we can

well afford to leave it alone. Perhaps some gentleman who may be a Junior under that old classification wishes he were not; and possibly some gentleman of that class—I have nobody in mind—may at some time run the gauntlet of getting into a higher class of his own motion. If he does not wish to, I think he should be left undisturbed. I do not think the Society has any right to attempt to move him. I think that clause should be left in just as it is.

Mr. COHEN.—I would like to add a word, Mr. President. The old Constitution, while it defined the requirements of a Junior, simply put no limit upon his connection with the Society. Now then, when limit was placed upon the continuance of a Junior, this clause which has been read and which it is now proposed to amend, provides that persons who were in the Junior class at the time of the adoption of this Constitution should not have their status changed by the provisions of this Section. You cannot amend that clause so as to change its force. They are not to have their status changed by its provisions. You may do anything else that does not interfere; but alter that you cannot. No amount of amendment to it will change its force at all. I cannot see exactly what the object is in changing the status of these Juniors. If they do not see fit to apply for advanced grade, they probably have some good reason; either that they do not choose to run the gauntlet of an election, or some other reason—the saving of advanced fees, it may be. There is nothing that we can do, in my judgment, that will be lawful or proper to turn them out of that position. And when they are called an anomalous class, they are a perfectly lawful class by the creation of the Society, and although it is not desirable to have half a dozen men in a different and distinct class from all the others, yet we have created them as such, and so long as they do not see fit to ask to have a change, we must let them alone. We cannot disturb them, in my view.

Mr. CROWELL.—One word more. Nature will take care of the question before many years, sir. (Laughter.)

The PRESIDENT.—There is one word further to be said about this Clause 6. The addition to Section 6 of Article II of this clause, or its elimination, has nothing whatever to do with the legal status of the men who were Junior members at that time. We simply express it here, and that is all. If it is eliminated, they have the same legal right to remain Juniors that they have with it in. You might, of course, and the only thing you can do, it seems to me, is to provide a more easy way for these Juniors to change their status voluntarily. That is the only thing you can do, in my opinion—not as your President, but simply as an ordinary member of the Society.

R. S. BUCK, M. Am. Soc. C. E.—In line with what you have just stated, Mr. President, I would like to offer an amendment to Major

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Knap's amendment, which changes the closing sentence of Section 6 of Article II to read as follows:

"The Board of Direction may change the grade of any Junior with his consent to whatever grade to which he is eligible."

That does away with several objections. In the first place, it does away with special legislation against that particular class. In the second place, it obviates the necessity of bringing a man before the Society for balloting a second time, and I think that the Board of Direction can be entrusted with the judgment of a man's case in that particular. As I understand it, he will go out on the Blue List and the Board will be open to any objection just as if he were to be voted on. It seems to me that would relieve the situation of the embarrassment which now seems to surround it.

Mr. COHEN.—Can I ask to have that proposed amendment read again?

Mr. BUCK.—"The Board of Direction may change the grade of any Junior, with his consent, to whatever grade to which he is eligible."

Mr. CROWELL.—Any Junior, or the Junior of a particular class?

Mr. BUCK.—No, any Junior, the grade of any Junior.

The PRESIDENT.—That makes no discrimination whatever. Are there any remarks on this amendment to the amendment of the proposed amendment?

G. S. WILLIAMS, Assoc. M. Am. Soc. C. E.—I would rise to a point of order. If I remember, an amendment to an amendment is about as far as you can go. While I would be glad to endorse and second the last amendment proposed, I think it is out of order in that form.

The PRESIDENT.—This is only the second amendment. The Chair rules that it is in order. Any further remarks on it?

PALMER C. RICKETTS, M. Am. Soc. C. E.—The difficulty about the original amendment, it seems to me, would be that a Junior is or may be a practicing engineer, and that an Associate is not intended—that class is not intended to be for practicing engineers, and I do not see that we have any right to change a man who may be a practicing engineer into a class which certainly is not intended—although I forget the exact wording of the Constitution—to be a class for practicing engineers. I do not think we have any moral right to do anything like that.

Mr. BUCK.—It seems to me that the provision "with his consent" covers all of that. If a Junior objects to being made an Associate, he certainly cannot be made an Associate.

Mr. RICKETTS.—I was not criticising your amendment. I was criticising the original amendment. As far as your amendment is concerned, I think it is open to this criticism, that it gives the Board the right to change the status of a member without submitting the ques-

tion to a vote of the members, because you include all Juniors. That point will have to be considered.

Mr. GOULD.—I think that the gentleman who has last spoken perhaps confuses Associates with Associate Members.

Mr. RICKETTS.—Not at all. No confusion at all. The original amendment, as I understand it, would transfer these Juniors, not to Associate Membership, but to Associates.

The PRESIDENT.—It would transfer them to such grade as they may be qualified for.

Mr. RICKETTS.—No; the original one I am talking about. The original amendment, as suggested by Mr. Morison, is that they should be taken up bodily and made Associates, whether they want to or not.

The PRESIDENT.—I will read that. This is the original proposition: "The Board of Direction may transfer any Junior elected prior to March, 1891, to the grade of Associate."

Mr. RICKETTS.—You take a practicing engineer then, and transfer him without his wish into a grade which is provided for men who are not practicing engineers. I do not think that the Society has any moral right to do anything of that nature.

Mr. GOULD.—One moment. I would acknowledge to Professor Ricketts that I was mistaken. His remarks were applicable to the amendment to which he refers. It was one of several amendments.

ALLEN HAZEN, M. Am. Soc. C. E.—Mr. President, as I understand it, the Board of Direction now has the power to elect any of these gentlemen Associates with their consent. It is unnecessary to amend the Constitution to secure that. I feel strongly the force of what Mr. Crowell has said and of what Mr. Cohen has said, and it seems to me that we should go very carefully indeed in touching what may be a contract—

The PRESIDENT.—Mr. Hazen, I would like to make a remark to you and the rest of the gentlemen here, and that is that in the discussion now, in order to avoid confusion in the minds of the members, I think your remarks for and against should be confined to the amendment to the amendment which we are now discussing, and you ought not to discuss the original amendment which will come up later on. That is simply a suggestion I would like to have the members keep in mind clearly. If your argument is against any one of these amendments, state specifically the one which you refer to.

Mr. HAZEN.—I do not think that I have anything to say as to the amendment to the amendment, sir.

MANSFIELD MERRIMAN, M. Am. Soc. C. E.—Mr. President, I rise to make the point of order that the amendment to the amendment is not a pertinent one and therefore not in order at this time. An amendment has been proposed relating to Juniors that are in a special class, namely, those elected prior to March, 1891; and therefore any amend-

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ment which goes into the question of all the Juniors or of the Associates or of the Associate Members, is not pertinent to the original resolution and therefore not in order.

The PRESIDENT.—The Chair would decide that the amendment is pertinent.

G. W. TILLSON, M. Am. Soc. C. E.—As I understand Mr. Buck's proposed amendment to the amendment, it would allow the Board of Direction to elect a Junior directly to full membership; is that so?

The PRESIDENT.—No, sir.

The SECRETARY.—I can explain that perhaps. A Junior ceases to be a Junior when he becomes thirty years of age, under our present Constitution, and a person is not qualified to be a Member until he is thirty. Consequently a Junior cannot be transferred to the grade of Member.

Mr. TILLSON.—Will not the wording of that amendment make him eligible to full membership?

The SECRETARY.—No, because he ceases to be a Junior when he becomes thirty.

Mr. CROWELL.—I should like to ask whether under the present Constitution the Board of Direction has not already the power to elect an Associate?

The SECRETARY.—Yes, sir; they have.

Mr. CROWELL.—What is the use of the amendment? If they propose to elect him as an Associate, they can do it after he ceases to be a Junior, as well as immediately before.

Mr. COHEN.—I would like to add one word. While I do understand the force of Mr. Buck's amendment to be that the Board may transfer, with his consent, a Junior to such class as the Board may see fit—

The PRESIDENT.—As he may be qualified for.

Mr. COHEN.—As he may be qualified to fill—with his consent. Now there is an express stipulation that Juniors who have been elected since this Constitution took effect will cease to be Juniors when they are thirty years of age. I have not recognized, and I am not sure that I recognize now that this provision, if carried, will authorize the Board to transfer any Junior to the advanced grade of full Member; but I would provide, for the very limited number of Juniors who are said to be in a class by themselves, that the Board should be empowered to transfer to any class for which they were eligible, with their consent, such members, by their action and without reference to the Society at large. If the amendment as presented does not cover quite that ground, I should like to see it amended to meet that point. All that they are pretending to deal with now is with a certain very limited number of Junior members, and if the Board be authorized to transfer them, with their consent, to any grade for

which they are eligible, you cover the whole thing. It may leave one or two who cannot be transferred, but that cannot be helped.

MR. R. S. BUCK.—It seems to me, that in view of the fact that the age of thirty years is the limit at which a person must cease to be a Junior, and at which he becomes eligible to full membership, that this would apply, without any further provision, to that particular class of Juniors who have reached the age of thirty, and who are otherwise qualified for full membership.

MR. WHINERY.—Mr. President, it, of course, is obvious to the membership that this amendment to the amendment defeats the object of the original amendment. Whether, therefore, it is pertinent or not, is a point of order that might be taken.

THE PRESIDENT.—Take an extreme case, Mr. Whinery, in explanation of my ruling: An amendment to any resolution striking out the enacting clause is always pertinent, and you could not make any more radical change than by striking out the enacting clause. Now we simply do by indirection what would be perfectly in order to do by direction.

MR. WHINERY.—I should object very strongly to the proposed amendment to the amendment for this reason: We had some talk here this morning about the care that is taken in admitting members to the Society. There is no question but that there is very much less care taken in the case of Juniors than in any other class; for the reason that the intent of the Constitution was to make the provision so broad that young men, graduates of engineering schools, could come in, and in that way enter the profession. The door has been made wide open for them. Now it does not seem to me proper that we should change the whole tenor of the Constitution in that respect, should make such a sweeping change as to transfer members from this class into any class to which they may be eligible. The Board, under that amendment, might pass a Junior directly to the grade of Member. The Constitution in its present form makes ample provision for the advancement of members through the various grades. I should certainly oppose any sweeping change like that. (Applause.)

L. L. TRIBUS, M. Am. Soc. C. E.—I am opposed to the amendment to the amendment, but I think our matter goes farther back than the present discussion, in the original change of the Constitution. I think that the amendment to the Constitution as proposed should have been compulsory on the Board of Direction or on the membership to transfer those Juniors at the time of the change of Constitution, to the grade of Associate Member. I should be strongly in favor of changing the proposed amendment and making it compulsory on the Board of Direction to change those Juniors who were members of the Society at the time of the change of the Constitution, at once, to the grade of Associate Member, merely trying to give them the status that they

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did not have at the time of the adoption of the Constitution. It seems to me that they were degraded at that time and that error has never been corrected before. I think that giving the Board the right to transfer to any grade would certainly be a mistake.

Mr. WHINERY.—I merely rise to correct the statement I made. My attention has been called to the fact that under this amendment to the amendment it would not be possible to transfer Juniors from the grade of Junior directly to the grade of Member, as I said.

Mr. CROWELL.—I should like to ask if it is possible for the Secretary to inform us how many individuals were in this class of Juniors that were Juniors before 1891.

The SECRETARY.—At the time of the first agitation of this question, some five months ago, I think it was, there were twenty odd. Since that time there have been one or two resignations and two or three transfers. I should say now that there are, perhaps, sixteen or seventeen in that grade—not more.

HENRY MANLEY, M. Am. Soc. C. E.—It seems to me that this last amendment, if it is likely to pass, is injudicious in this respect: Any one reading the amendment would fall into the same error that Mr. Whinery did, and that I did when I first heard it. On the face of it, it allows of a transfer of a Junior member to any position to which he is eligible. He may be eligible by natural talent to that position, whereas others would have to stand and wait. But it is discovered that in another remote part of the Constitution there is a provision forbidding that. It seems to me it is injudicious in form and should be voted down.

The PRESIDENT.—Our time is short, gentlemen, and I believe this matter has been fully discussed. If we can find that amendment we will have it read to you before we vote on it. Will the Secretary please read the amendment to the amendment?

The SECRETARY (reading).—"The Board of Direction may change the grade of any Junior, with his consent, to whatever grade to which he is eligible."

The PRESIDENT.—Is that all?

The SECRETARY.—It seems to be all, sir.

The PRESIDENT.—The vote is now on the amendment to the amendment of the original proposition to amend the Constitution. All in favor of this amendment will signify by saying Aye; contrary, No.

The amendment was lost.

The PRESIDENT.—The vote is now on the amendment to the proposed amendment to the Constitution suggested by Mr. Knap. Will the Secretary please read it?

The SECRETARY (reading).—"Strike out the final sentence of Section 6 of Article II, reading: 'Persons who are in the Junior class at the

time of the adoption of this Constitution shall not have their status changed by the provisions of this section,' and substitute therefor the following: 'Persons who became Juniors on or before the date of the adoption of this Constitution may be transferred to other classes of membership by the Board of Direction. Until so transferred they shall continue to be Juniors.'"

The PRESIDENT.—All in favor of this amendment will signify by saying Aye; all opposed, No.

The amendment was lost.

The PRESIDENT.—The vote is now on the original proposition to amend the Constitution which is as follows—that is, I mean, whether it shall be sent to letter-ballot. The Secretary corrects me. The proposed amendment reads as follows:

"Amend Section 5 of Article II by adding the following: 'The Board of Direction may transfer any Junior elected prior to March 4th, 1891, to the grade of Associate.'"

All in favor signify by saying Aye; contrary, No. It is lost.

The SECRETARY.—I think, sir, that this meeting has no option whatever in this matter. The Constitution provides that an amendment to the Constitution shall be presented at a certain time and shall come up for discussion at one of the general meetings of the Society. If amended, it shall be sent out to letter-ballot in amended form. If not amended, it shall be sent out in the original form.

The PRESIDENT.—Gentlemen, we stand corrected. There is nothing to do except to follow the Constitution and send this proposed amendment out to letter-ballot unless it is amended. The Secretary will read the clause in the Constitution.

The Secretary read the clause in the Constitution relating to amendments.

F. P. STEARNS, M. Am. Soc. C. E.—Is it in order to ask a question?

The PRESIDENT.—Yes, sir.

Mr. STEARNS.—Can this meeting give an expression of opinion as to whether it is expedient to pass the amendment, so that with the ballot might go out the expression of opinion of this meeting?

The PRESIDENT.—I do not think so—any more than the meeting has already expressed itself.

Mr. STEARNS.—That expression of opinion, which I believe is on record, as to the original amendment—

The PRESIDENT.—This meeting, of course, could pass a resolution instructing the Secretary to say that it was the sense of the members assembled in Annual Meeting that they were not in favor of this proposition.

Mr. STEARNS.—That is what I was proposing.

The PRESIDENT.—There would have to be a resolution made, of course, to that effect and regularly passed.

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(continued).

Mr. STEARNS.—I intended to make that resolution. You have worded it substantially as I intended.

The PRESIDENT.—Is there a second to that?

A member seconded the resolution.

The PRESIDENT.—Will the gentleman kindly write his resolution out? I believe you all understand the resolution thoroughly. It is that the Secretary be instructed to inform the members when this proposed amendment is sent out to letter-ballot that it is the sense of this meeting that it be not adopted. Is that correct?

Mr. R. S. BUCK.—With a statement of the vote, Mr. President.

Mr. CROWELL.—It seems to me that a statement of fact that it was discussed and what happened here is proper. It does not seem to me that this meeting has exactly the right to instruct the membership of this Society at large, and it would look like an attempt to do it. I think that the mere recital of the facts in regard to this question would be in order and proper.

Mr. BUCK.—It seems to me that a recital of the facts would certainly include what the vote was. To say that the meeting was in favor of it, without stating how many voted or how many voted each way, would give, it seems to me, the adequate information.

The PRESIDENT.—It is in the hands of the meeting to indicate how it desires to express its opinion, whether by ayes and noes, or simply by majority vote.

JOHN F. O'ROURKE, M. Am. Soc. C. E.—A man could have become a Member three or four times over, although he was ineligible for anything but Junior, since this discussion was begun. It seems to me it is a matter which will settle itself. These Juniors will all die sometime, and this discussion will go on. I should prefer to leave out all mention in the letter-ballot of what has been done. Suppose we are a little bit wiser than anybody else, and want to tell the other fellows what to do—they get that without cost in the *Proceedings*. Anybody that reads the *Proceedings* will know that this was voted upon here and voted down. Perhaps we could find out those who do not care to read the *Proceedings*, and send them a little private letter telling them how the vote was. But it strikes me the most dignified way to treat this matter is to drop it at this meeting, and let it go through the regular channels.

A MEMBER.—I want to ask one question, with your permission—whether a further amendment to the amendment would be in order?

The PRESIDENT.—Certainly, you can amend here all day.

A MEMBER.—An amendment has been suggested which I think would meet the approval of a number—to add the word "Member"; make it read "Associate Member" instead of "Associate."

The PRESIDENT.—Is there any second to the amendment?

No one seconded the amendment.

The PRESIDENT.—The resolution is in order. All in favor of the resolution signify by saying Aye; contrary, No.

The resolution was lost.

The PRESIDENT.—The next business is the selection of the Nominating Committee. By a recent amendment to the Constitution, the appointment of seven members of the Nominating Committee, which has heretofore been made at the Annual Convention, is to be similarly made hereafter at the Annual Meeting. A circular was duly sent out asking for suggestions for representatives of the seven districts on this Committee, and the Secretary has a report of the returns received.

The Secretary read the nominations for District No. 1, as follows:

District No. 1.—Total number of votes received, 39; as follows:

IRA A. SHALER.....	18
R. S. BUCK	4
EDWARD P. NORTH.....	2

The following, one each:

WM. HENRY BALDWIN,	CHAS. MACDONALD,
H. W. BRINCKERHOFF,	O. F. NICHOLS,
WM. H. BURR,	H. G. PROUT,
THEODORE COOPER,	MAX E. SCHMIDT,
ALFRED CRAVEN,	S. C. THOMPSON,
HENRY GOLDMARK,*	JOHN C. WAIT,
HENRY W. HODGE,	J. WALDO SMITH,
WM. R. HUTTON,	S. C. WEISKOPF,
	WM. J. WILGUS.

The PRESIDENT.—These names are simply suggestions, as I understand it, to this meeting, to enable the meeting to know the opinion of the members residing in the district. Is that right, Mr. Secretary?

The SECRETARY.—It is in the power of this meeting to elect any one.

The PRESIDENT.—It is in the power of this meeting to elect any one. It has been customary to consider the candidate receiving the highest number of votes as the nominee, unless there are other nominations. Is a regular motion necessary?

The SECRETARY.—I think so; yes, sir.

The PRESIDENT.—A regular motion, however, is necessary to put Mr. Shaler's name in nomination or any other representative of District No. 1.

A MEMBER.—I nominate Mr. Shaler. (Seconded.)

The PRESIDENT.—Are there any other nominations? If not, all in favor of Mr. Shaler being on the Nominating Committee from District No. 1, will signify by saying Aye; contrary, No.

The motion was carried.

The PRESIDENT.—Mr. Shaler is appointed.

The Secretary read the nominations from District No. 2, as follows:

* Ineligible.

Appointment
of
Nominating
Committee
(continued).

District No. 2.—Total number of votes received, 39; as follows:

S. E. TINKHAM	14
F. S. CURTIS	3
DESMOND FITZGERALD*	2
RICHARD A. HALE	2
C. FRANK ALLEN	2
GEO. A. KIMBALL	2
HENRY MANLEY	2
GEO. F. SWAIN	2
J. P. SNOW	2

The following, one each:

A. S. CHEEVER,	FRANK O. MAXSEN,
FREDERIC DANFORTH,	C. B. VORCE,
JOHN R. FREEMAN,	J. R. WORCESTER,
X. H. GOODNOUGH,	EDWIN P. DAWLEY.

Mr. CROWELL.—I move the gentleman having the greatest number of votes be appointed on the Committee.

The SECRETARY.—That is Mr. Tinkham.

The motion was seconded.

The PRESIDENT.—It is moved and seconded that Mr. Tinkham be elected a member of the Nominating Committee from the Second District. All in favor signify by saying Aye; contrary, No.

The motion was carried.

The PRESIDENT.—Mr. Tinkham is elected.

The Secretary read the nominations from District No. 3, as follows:

District No. 3.—Total number of votes received, 25; as follows:

JOHN F. ALDEN	4
EDW. B. GUTHRIE*	3
ELNATHAN SWEET	3
LOUIS H. KNAPP	2
T. C. LEUTZE	2

The following, one each:

WM. B. COGSWELL,	WM. B. LANDRETH,
C. L. CRANDALL,	W. G. RAYMOND,
W. A. HAVEN,	RICHARD W. SHERMAN,
EDMUND HAYES,	T. GUILFORD SMITH,
EMIL KUICHLING,	T. W. SYMONS,
W. G. M. THOMPSON.	

Mr. CROWELL.—I move that the highest one, Mr. Alden, be appointed. (Seconded.)

The PRESIDENT.—Are there any other nominations? It is moved and seconded that Mr. Alden be elected a member of the Nominating Committee from District No. 3. All in favor signify by saying Aye; contrary, No.

The motion was carried.

The PRESIDENT.—Mr. Alden is elected.

* Ineligible.

The Secretary read the nominations from District No. 4, as follows:

District No. 4.—Total number of votes received, 50; as follows:

PAUL L. WÖFEL.....	13
L. Y. SCHERMERHORN.....	9
MANSFIELD MERRIMAN.....	4
GEO. S. DAVISON.....	4
KENNETH ALLEN.....	2
CHAS. G. DARRACH.....	2
ALEXANDER MACKENZIE.....	2
THOMAS RODD.....	2
C. C. SCHNEIDER.....	2

The following, one each:

ARTHUR P. DAVIS,	HENRY G. MORSE,
C. B. DUDLEY,	SAMUEL REA.
THOS. H. JOHNSON,	EMIL SWENSSON,
CHARLES H. LATROBE,	GEO. E. THACKRAY,
DAVID E. McCOMB,	THEO. VOORHEES,
WM. R. WEBSTER.	

A MEMBER.—Mr. President, I move that Mr. Paul L. Wölfel be elected a member of the Nominating Committee for District No. 4. (Seconded.)

Mr. CARTWRIGHT.—How many votes did Mr. Wölfel have?

The SECRETARY.—Thirteen.

The PRESIDENT.—Any other nominations? All in favor of the election of Mr. Wölfel as member of the Nominating Committee for District No. 4 will say Aye; contrary, No.

The motion was carried.

The PRESIDENT.—Mr. Wölfel is elected.

The Secretary read the nominations from District No. 5, as follows:

District No. 5.—Total number of votes received, 41; as follows:

FRANK C. OSBORN.....	3
ONWARD BATES.....	2
G. B. NICHOLSON.....	2
ALFRED NOBLE*.....	2
CHAS. L. STROBEL*.....	2
JOHN F. WALLACE*.....	2
WALTER P. RICE.....	2

The following, one each:

G. BOUSCAREN,	R. L. READ,
D. D. CAROTHERS,	H. E. RIGGS,
EDW. C. CARTER,*	JAMES RITCHIE,
B. L. CROSBY,	SAMUEL ROCKWELL,
CHAS. E. GREENE,	L. W. RUNDLETT,
E. A. HANDY,	JOHN H. SAMPLE,
HORACE E. HORTON,	E. C. SHANKLAND,
WM. H. HUGHES,	A. V. SIMS,
WM. C. JEWETT,	CADY STALEY,
GEO. W. KITTREDGE,	JOHN F. STEVENS,
WM. DE LA BARRE,	JOB TUTHILL,
G. A. MARR,	CHAS. A. WILSON,
RALPH MODJESKI,	GEO. Y. WISNER.

*Ineligible.

Appointment
of
Nominating
Committee
(continued).

The SECRETARY.—Of the gentlemen whose names were first read, it is quite likely that the one having the highest number of votes will be a member of the Board of Direction—he may be, at all events—Mr. Osborn; and Mr. Noble, Mr. Strobel, Mr. Wallace and Mr. Carter are ineligible.

A MEMBER.—Who is the next?

The SECRETARY.—Mr. Onward Bates.

The MEMBER.—I nominate Mr. Bates.

Mr. CROWELL.—I second the motion.

The PRESIDENT.—All in favor of Mr. Onward Bates being elected member of the Nominating Committee from District No. 5 will signify by saying Aye; contrary, No.

The motion was carried.

The PRESIDENT.—Mr. Bates is elected.

The Secretary read the nominations from District No. 6, as follows:

District No. 6.—Total number of votes received, 32; as follows:

B. L. CROSBY.....	4
B. MONTFORT.....	3
JAMES P. ALLEN.....	2
CHAS. S. CHURCHILL.....	2
GEO. G. EARL.....	2
EDWARD FLAD*.....	2
J. A. OCKERSON.....	2

The following, one each:

C. P. E. BURGWIN,	HUNTER McDONALD,
W. M. BLACK,	F. A. MOLITOR,
D. BONTECOU,	S. F. MORRILL,
W. H. COURTNEY,	GEO. B. NICHOLSON,
W. B. W. HOWE, Jr.,	JOS. RAMSEY, Jr.,*
B. M. HARROD,*	ANDREW ROSEWATER,
J. F. HINCKLEY,	A. M. SCOTT,
W. V. JUDSON.	

Mr. CROWELL.—I move the first name on the list.

(Seconded.)

The PRESIDENT.—Any other nominations?

ALFRED W. TROTTER, M. Am. Soc. C. E.—I would like to nominate Mr. Montfort. I think it would be very advantageous to the Society to secure his services.

The PRESIDENT.—Gentlemen, you have heard two names. I will put Mr. Crosby's first as he was nominated first. All in favor of Mr. Crosby being elected member of the Nominating Committee from District No. 6, hold up their right hands.

Twenty-eight members held up their right hands.

The PRESIDENT.—All in favor of Mr. Montfort will signify by holding up their right hand.

Twenty-eight members voted for Mr. Montfort.

* Ineligible.

The SECRETARY.—You have the deciding vote, sir.

The PRESIDENT.—I shall decide in favor of Mr. Montfort for the reason that I think he represents, on account of his position of Chief Engineer of the Louisville and Nashville, and his age, probably a larger number of the members of the Society in that district than Mr. Crosby, although either one of those gentlemen would be abundantly fitted and qualified for a position on the Nominating Committee.

The Secretary read the nominations from District No. 7, as follows:

District No. 7.—Total number of votes received, 21; as follows:

ARTHUR L. ADAMS.....	2
W. W. FOLLETT.....	2
CHAS. D. MARX.....	2
A. S. RIFFLE.....	2

The following, one each:

F. W. BLACKFORD,	A. I. FRYE,
R. E. BRIGGS,	C. E. GRUNSKY,
H. ST. L. COPPEE,	J. HERRON,
W. G. CURTIS,	W. H. KENNEDY,
C. E. L. B. DAVIS,	M. L. LYNCH,
C. E. FOWLER,	ELWOOD MEAD,
M. H. ROGERS.	

Mr. CARTWRIGHT.—Mr. President, in the interest of our Society in the far West I would suggest the name of Mr. Marx. He is a professor in Stanford University, and a man that can do the Society remarkable good in the West, and I would put his name in nomination.

A MEMBER.—I second the nomination.

Mr. R. S. BUCK.—May I ask the highest number of votes received for any gentleman?

The SECRETARY.—There were four gentlemen; each had two votes.

The PRESIDENT.—Any other nominations for the 7th District? Before putting this to vote, the Secretary informs me the hour of 12 o'clock is here, and I therefore declare the ballot closed. All in favor of Mr. Marx being elected member of the Nominating Committee to represent District No. 7, signify by saying Aye; contrary, No.

The motion was carried.

The PRESIDENT.—Mr. Marx is elected.

N. P. LEWIS, M. Am Soc. C. E.—If I am in order I would like to say a word in behalf of the Nominating Committee. The Nominating Committee consists of 19 members, five of whom are Past-Presidents. At the last meeting of that Committee there were seven members present. Three districts were entirely unrepresented. Now I believe that the Nominating Committee is clothed with considerable discretion in presenting names to be balloted on for the general officers of the Society—President, Vice-Presidents at large and Treasurer; but when it comes to representation in the Board of Direction they should be guided very largely, if not entirely, by the expression of opinion from

the members of each district. It has been found impossible to get such an expression of opinion when so small a minority of the Committee have been present, and it has been necessary to have their action confirmed by correspondence, which has taken a good deal of time and has been somewhat laborious. It is to be hoped that at the Annual Convention next summer a much larger representation of the Committee can be had, but I think it is the duty of the members of the Society to get into communication with the member of the Nominating Committee from their district, and I think I may promise that the Membership Committee between now and the Annual Convention will endeavor to obtain an expression of opinion from the membership of the Society at large; but I do not think the membership ought to wait to be solicited for such an expression, but they should put the member of the Nominating Committee more in touch with themselves, and should put in his possession any suggestions, both for nominations for the general officers of the Society, and especially for nominations for the Board of Direction to represent that district, and I sincerely hope that the members here present will bear that in mind and try to help the Nominating Committee as much as they can to submit names which will be entirely representative, and which will also meet with the hearty approval of the membership in the various districts. (Applause.)

Report of
Committee on
Cement.

The PRESIDENT.—Gentlemen, we have a Standing Committee from whom we have not had a report for some time. I refer to the Committee on Cement. I believe the Chairman, Prof. George F. Swain, is present, and perhaps can furnish us with a progress report.

GEORGE F. SWAIN, M. Am. Soc. C. E.—Owing to circumstances which have prevented the Chairman of the Committee from devoting much time to the work during the past year, the Committee is not able at this time to submit any formal report, although it has made some progress, and has a large amount of work blocked out.

That is all that the Committee has to say; but in my individual capacity I have two remarks to make. The first is, that if any members of the Society are disposed to complain of the slow progress of the Committee, they should put the blame directly on the Chairman, because it is owing to him that so little has been done in the past year. The second thing is this: The Committee as originally appointed consisted of seven members. One has since resigned from the Society, leaving six. Some members of the Committee at least have thought that it would be very desirable if the chemist and manufacturer could have some representation. I am not sure what action was taken by the Society when it passed the original resolution to appoint the Committee as to whether the number of the Committee should be limited, and the members of the Committee are not agreed as to whether the number of the Committee should be increased.

The vacancy, I presume, should be filled and will be filled; but it might be desirable—I simply bring it before the Society—it might be desirable, perhaps, to authorize the Board of Direction to increase the Committee if they should think it desirable.

The PRESIDENT.—Is there any motion to that effect?

E. B. CODWISE, M. Am. Soc. C. E.—I move that the Committee have the power to increase its number if it so desires. (Seconded.)

The PRESIDENT.—Are there any remarks on the motion?

PROF. SWAIN.—I did not hear the motion.

The PRESIDENT.—The motion was that the Committee be given the power to increase its membership to such an extent as it may desire. Any remarks on that motion? All in favor signify by saying Aye; contrary, No.

The motion was carried.

The SECRETARY.—The report of the tellers will be ready in a very few minutes. The programme says that at one o'clock lunch will be served, and if necessary this meeting will be resumed. We hope that will not be necessary. I think, Mr. President, you had better fix an hour, as soon after lunch as possible—say half-past one—for the meeting of the Board of Direction.

Meeting of
Board of
Direction.

The PRESIDENT.—The meeting of the Board of Direction will take place immediately after this meeting and before lunch (laughter). One of the fundamental principles, you know, of engineers, particularly the old ones, in which class I presume I can now consider myself, is to finish our work before we eat (laughter).

The SECRETARY.—As to the excursions which have been arranged for this afternoon; we will view the work of the Rapid Transit construction. While we are eating lunch we will try to form some plan by which the parties can be gotten together. There are several members of the Society engaged on that work who have kindly offered to go with parties and show them what there is to see, one party going to the North and one going to the South; and it has been suggested, and I think will be carried out, that a special car will be ready at a certain time—I am not prepared to say now what that hour will be—but before the lunch to-day is over I think we will be able to say just how each person who wishes to see this work shall go about it.

Programme of
Annual
Meeting.

The reception this evening will be at 9 o'clock, and it is hoped that as many ladies will come as there are members present.

The excursion to-morrow will leave promptly at 10 o'clock from West Fifty-seventh Street. The steamer *Valley Girl*, which has been obtained through the courtesy of Mr. John H. Starin and General Howard Carroll, will leave promptly—I repeat it—because we have a good deal to see, and it is necessary that we should be prompt. During the day luncheon will be served on the boat, and a stop will be made

Programme of at one or more points where the work of the Department of Docks and Ferries is now going on on the East River.
Annual Meeting (continued).

By invitation of Mr. Thomas E. Murray, General Manager of the New York Gas and Electric Light, Heat and Power Company, and J. W. Leib, Jr., M. Am. Soc. C. E., General Manager of the Edison Electric Illuminating Company, and Mr. John Van Vleck, Constructing Engineer of both companies, a party will visit the Water-Side Power Station at Thirty-eighth Street, East River. A stop will also be made, by invitation of George H. Pegram, M. Am. Soc. C. E., Chief Engineer at the new power station of the Manhattan Railway Company at Seventy-fourth Street, East River.

To-morrow night at 8.30, in this room, Elwood Mead, M. Am. Soc. C. E., Expert in Charge of Irrigation Investigations, United States Department of Agriculture, will describe irrigation methods in use in the arid regions, showing lantern slides, of unirrigated and irrigated lands in that region, some of the canals and head-gates of irrigation systems, the apparatus used in the Department in the investigations of the duty of water, and the results of these studies. After that lecture there will be a smoker.

Mr. J. H. Granbery, Junior of the Society, Engineer in Charge of Construction of the Arlington Copper Company, has extended an invitation to those members who are specially interested in works of that kind, to visit the works of that company at Arlington, N. J., on Friday, at any time which suits their convenience. Arlington is 30 minutes from the foot of Chambers Street *via* the New York and Greenwood Lake Branch of the Erie Railroad, and it is about a mile from the station to the works. I asked Mr. Granbery if he would state what was the best time to go out there, and he sent me some time tables. An examination of them leads to the belief that the best train is the one which leaves at 9.40 in the morning from Twenty-third Street, 9.45 from Chambers Street. That train gets to Arlington at 10.15; and if such members as desire to view those works (and quite a number have informed the Secretary that they would like to go) will go on that train, I will try and arrange it with Mr. Granbery that they shall be met and taken through the works. I understand that it will take about two hours after reaching the works to go through the mines.

Mr. President, I have a letter here which I would like to read.

NEW YORK, January 9th, 1901.

CHARLES WARREN HUNT, Esq.,

Secretary, Am. Soc. C. E.,

220 West Fifty-seventh Street, N. Y.

DEAR SIR,—Thinking that some of the members attending the annual meeting might be interested in the pneumatic foundations now in progress for the Mutual Life Building at 55 Cedar Street, the contractors, Arthur McMullen & Co., and the architects, Messrs. Clinton and Russell, Major J. Hollis Wells, Engineer, desire me to

Invitation to
Inspect
Foundations of
Mutual Life
Building.

state that they would be glad to show any of the members over the work. If we are notified in advance, Major Wells and Mr. McMullen will be on hand to explain.

The foundations are carried to rock about 100 ft. below the curb, or 80 ft. below water at deepest point, on 35 rectangular caissons and 46 circular caissons, including those used to support old walls. The rectangular caissons form an 8-ft. wall around the entire lot (which is 16 000 ft. square), and after this retaining wall is completed the cellar will be excavated to a depth of about 35 ft. below standing water while the iron work of the building is being erected. The erection of iron has now begun on the Cedar Street end and 65 of the caissons are completed.

There are many interesting features about the work, including the ramming of clay between the caissons to hold the water back while excavating the cellar.

Yours truly,

T. KENNARD THOMSON, M. Am. Soc. C. E.,
Engineer for Contractor.

I am just informed that it will be about ten minutes before the report of the tellers is ready.

A MEMBER.—I move that a recess of ten minutes be taken.

The PRESIDENT.—Gentlemen, we have about ten minutes before we will hear the report of the tellers, and new business is in order; and if any member has anything to suggest or any motion to make for the good of the Society, I presume that we will have time enough to consider it.

HENRY G. PROUT, M. Am. Soc. C. E.—It is Mr. O'Rourke's suggestion that we might have a discussion on Standard Time (laughter).

The PRESIDENT.—If there is no objection we will take a recess for ten minutes, without leaving the room or your seats. In other words we will "rest arms."

(Recess.)

The PRESIDENT.—Will the gentlemen back near the door inform the gentlemen in the library that recess is ended? The Secretary will now read the report of the tellers. Report of
Tellers.

The Secretary read the tellers' report respecting the vote for President.*

The PRESIDENT.—I have the pleasure, gentlemen, to announce the election of Mr. Croes as President of the Society for the ensuing year. (Applause.) The Secretary will now go through the remainder of the list.

The Secretary read the vote for Vice-Presidents.

The PRESIDENT.—Messrs. Haines and Benzenberg are elected Vice-Presidents for the next two years. (Applause.)

The Secretary announced the vote for Treasurer.

* For full report of the tellers, see page 58.

Report of
Tellers
(continued).

The PRESIDENT.—Mr. Knap is elected Treasurer for the ensuing year. (Applause.)

The Secretary stated the vote for Director from District No. 1.

The PRESIDENT.—Mr. Briggs is elected for the 1st District.

The Secretary stated the vote for Director for District No. 2.

The PRESIDENT.—Mr. Swain is elected Director from the 2d District.

The Secretary stated the vote for Director for District No. 3.

The PRESIDENT.—Mr. Kuichling is elected Director from the 3d District.

The Secretary stated the vote for Director for District No. 4.

The PRESIDENT.—Mr. Endicott is elected Director from the 4th District.

The Secretary read the vote for Directors for District No. 5.

The PRESIDENT.—Mr. E. C. Carter and Mr. F. C. Osborn are elected Directors from District No. 5.

Report of Tellers Appointed to Canvass the Ballot for the Election of Officers at the Annual Meeting, January 16th, 1901.

Whole number of ballots received.....	616
Without signatures.....	6

Counted.....	610
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For President:

J. James R. Croes.....	592
Robt. Moore.....	6
Theodore Cooper.....	1
Jas. Dun.....	1
Clemens Herschel.....	1
Rudolph Hering.....	1
Ed. P. North.....	1
F. P. Stearns.....	1
John M. Wilson.....	1
Defective.....	1
Blank.....	4

For Vice-Presidents:

Henry S. Haines.....	589
Geo. H. Benzenberg.....	592
Alexander Mackenzie.....	25
Howard G. Kelley.....	2
Geo. S. Webster.....	2
Geo. A. Quinlan.....	1
John G. Van Horne.....	1
Defective.....	2
Blank.....	6

For Treasurer:

Jos. M. Knap.....	606
John Thomson.....	2
Jas. H. Fuertes.....	1
Blank.....	1

*For Directors :**District No. 1 :*

Josiah A. Briggs	605
C. C. Upham	1
Blank	4

District No. 2 :

George F. Swain	605
Geo. B. Francis	1
Geo. A. Kimball	1
Henry Manley	1
Blank	2

District No. 3 :

Emil Kuichling	604
John F. Alden	1
Wm. A. Brackenridge	1
Blank	4

District No. 4 :

Mordecai T. Endicott	608
Lewis M. Haupt	1
Jas. H. Harlow	1
Blank	5

District No. 5 :

Edward C. Carter	389
Frank C. Osborn	282
Wm. H. Searles	241
Defective	287
Blank	21

WM. B. FULLER,
OSCAR ERLANDSEN,
OSCAR LOWINSON,

Tellers.

JANUARY 16th, 1901.

The PRESIDENT.—Gentlemen, before drifting into the past, I desire to thank you for the honor that you did me a year ago, and for the courteous and kind treatment that I have received at your hands. I will now ask that Mr. Hering bring forward the President-Elect. (Applause.)

Mr. Hering escorted President Elect Croes to the platform.

PRESIDENT WALLACE.—In laying aside this gavel, it gives me pleasure to know that I am to be succeeded by so worthy a man as Mr. Croes, who needs no introduction to you. (Applause.)

J. J. R. CROES, President, Am. Soc. C. E.—Gentlemen, I desire to express my sincere thanks to you and my high appreciation of the honor conferred upon me. My only fear in the matter is that I shall not be able to fill the position with the efficiency and dignity shown by my immediate predecessor in the office, and by the long list of predecessors whose example is before me. I can only say that I trust that I may emulate them in the discharge of the duties of the office.

I believe that the President does not assume the chair until the close of the Annual Meeting. However, I feel obliged, though with reluct-

ance, to change the ruling of my predecessor right here, and to announce that the meeting of the Board of Direction will be held after lunch instead of before. (Applause.) Gentlemen, a motion to adjourn is in order.

Mr. CROWELL.—I move that we now adjourn.

The motion was carried and the meeting adjourned.

Thursday, January 17th, 1901.—The meeting was called to order at 8.30 p. m., President J. James R. Croes in the chair; Assistant Secretary T. J. McMinn, acting as Secretary, and present, also, 136 members and 28 guests.

Elwood Mead, M. Am. Soc. C. E., delivered a lecture, illustrated with the stereopticon, on irrigation methods in use in the arid regions of the United States.

Adjourned.

EXCURSIONS AND ENTERTAINMENTS AT THE FORTY-EIGHTH ANNUAL MEETING.

Wednesday, January 16th, 1901.—After the business meeting lunch was served at 1.30 p. m. in the Lounging Room. After lunch several parties were organized and visited the construction work of the Rapid Transit Railroad Commission, under the guidance of the engineers of that work.

At 9 p. m. a Reception was held in the Society House, which was largely attended.

Thursday, January 17th, 1901.—At 10.30 a. m. the steamer *Valley Girl* (kindly furnished for the occasion by John H. Starin, Esq., and General Howard Carroll), with about 350 members and guests, including many ladies, left the pier of the Department of Docks, at the foot of West Fifty-seventh Street, for an excursion. The steamer proceeded down the North River, around the Battery and up the East River. At the New York and Brooklyn Bridge and at the New East River Bridge speed was reduced in order to give an opportunity to view those structures. A stop was made at the foot of East Twenty-second Street, in order to inspect the work of the Dock Department at that place.

A stop was also made at Thirty-eighth Street, where the Water-Side Power Station of the New York Gas and Electric Light, Heat and Power Company was inspected. Another landing was made at Seventy-fifth Street in order to view the electric power station of the Manhattan Railway. Lunch was served *en route*, and the steamer then conveyed the party to the Recreation Pier at East Twenty-fourth Street.

At 8.30 p. m. Elwood Mead, M. Am. Soc. C. E., delivered a lecture

on irrigation methods in use in the arid regions of the West. The lecture was illustrated with lantern slides.

After the lecture there was an informal "Smoker," which was enjoyed by about 170 members and guests.

The following list contains the names of 319 members of various grades, who registered as being in attendance at the Annual Meeting. This list is incomplete, on account of the failure of many members to register, and it does not include the names of any of the guests of the Society or of individual members:

Aiken, W. A.	Pittsburg, Pa.	Burrows, Geo. L.	Saginaw, Mich.
Aus, Gunwald	New York City	Carney, E. J.	New York City
Averill, F. L.	Washington, D. C.	Carr, Albert.	New York City
Bacon, John W. . . .	Danbury, Conn.	Cartwright, R. . . .	Rochester, N. Y.
Baldwin, F. H. . . .	Bayonne, N. J.	Catt, Geo. W.	New York City
Ballou, G. L.	New York City	Chambers, R. H. . . .	New York City
Basinger, J. G. . . .	New York City	Chase, F. L.	New York City
Baum, George. . . .	New York City	Chester, J. N.	Pittsburg, Pa.
Belzner, Theodore. .	New York City	Christian, G. L. . . .	New York City
Bensel, J. A.	New York City	Clark, G. H.	New York City
Berg, Walter G. . . .	New York City	Clark, John A., Jr. .	Orange, N. J.
Bishop, G. H.	Middletown, Conn.	Clarke, T. C.	New York City
Bissell, H.	Boston, Mass.	Codwise, E. B. . . .	Kingston, N. Y.
Boecklin, Werner, Jr.		Coffin, Amory. . . .	New York City
	New York City	Coffin, T. Amory	
Boggs, J. I.	Tie Siding, Wyo.		West New Brighton, N. Y.
Boller, Alfred P. . .	New York City	Cogswell, W. B. . . .	Syracuse, N. Y.
Boller, A. P., Jr. . .	Brooklyn, N. Y.	Cohen, Mendes. . . .	Baltimore, Md.
Bontecou, D.	Kansas City, Mo.	Colby, S. K.	New York City
Bonzano, A.	Philadelphia, Pa.	Cole, John A.	Chicago, Ill.
Booth, W. F.	Poughkeepsie, N. Y.	Cole, Howard J. . . .	East Orange, N. J.
Bowman, A. L.	New York City	Collier, B. C.	New York City
Boyd, Jas. C.	Boston, Mass.	Cook, John H.	Paterson, N. J.
Braine, L. F.	Brooklyn, N. Y.	Cooper, S. L.	Yonkers, N. Y.
Bramwell, G. W. . .	New York City	Cooper, Theodore. . .	New York City
Brinckerhoff, H. W. .	New York City	Corby, C. E.	Brooklyn, N. Y.
Brown, Le Grand. . .	Rochester, N. Y.	Cornell, Geo. B. . . .	New York City
Brown, T. E., Jr. . .	New York City	Cornell, J. N. H. . . .	New York City
Buck, H. R.	Wethersfield, Conn.	Corthell, A. B.	Boston, Mass.
Buck, L. L.	New York City	Cotton, Joseph P. . .	Newport, R. I.
Buck, R. S.	New York City	Craven, Alfred. . . .	New York City
Buck, W. E.	Worcester, Mass.	Creuzbaur, R. W. . .	New York City
Burbank, Geo. B. . .	New York City	Croes, J. J.	New York City
Burdett, F. A. . . .	Brooklyn, N. Y.	Cudworth, F. G. . . .	Brooklyn, N. Y.
Burns, Justin. . . .	New York City	Cummings, Noah. . .	New York City

Darrach, C. G. . . Philadelphia, Pa.
 Davies, John V. . . New York City
 Davis, Chandler. . . New York City
 Davis, Charles. . . Allegheny, Pa.
 Davis, Chester B. . . New York City
 Davis, W. R. . . . Albany, N. Y.
 Day, Arthur M. . . New York City
 Dean, Luther. . . Taunton, Mass.
 Deans, J. S. . . . Phoenixville, Pa.
 DeWitt, Elmore. . . Steelton, Pa.
 Diebitsch, Emil. . . New York City
 Dixon, D. H. . . . Milwaukee, Wis.
 Dunklee, J. B. . . South Orange, N. J.
 Dunham, H. F. . . New York City

Edwards, J. H. . . East Berlin, N. Y.
 Enos, G. W. . . . New York City
 Erlandsen, Oscar. . . New York City
 Evans, Louis H. . . New York City
 Evans, M. E. . . . New York City

Farnum, H. H. . . New York City
 Farrington, H. . . New York City
 Felton, Herbert C. . . Camden, N. J.
 Fisher, F. D. . . . New York City
 Frank, Geo. W. . . New York City
 Frazee, J. H. . . . New York City
 Freeman, J. R. . . Providence, R. I.
 French, A. H. . . Brookline, Mass.
 Fuertes, James H. . . New York City
 Fuller, Geo. W. . . New York City
 Fuller, W. B. . . . Boston, Mass.
 Furber, Wm. C. . . Philadelphia, Pa.
 Furman, J. R. . . London, England

Garrison, F. L. . . Philadelphia, Pa.
 Gartensteig, Chas. . . New York City
 Gay, Martin New York City
 Gibbs, George. . . Philadelphia, Pa.
 Gifford, Geo. E. . . New York City
 Gillespie, R. H. . . New York City
 Goldsborough, J. B.

Croton-on-Hudson, N. Y.
 Goodrich, W. F. . . Somerville, Mass.
 Gould, E. Sherman. . . Yonkers, N. Y.
 Graham, C. H. . . New York City

Gray, W. New York City
 Green, B. R. . . Washington, D. C.
 Greene, G. S., Jr. . . New York City
 Grimm, C. R. . . . Elmira, N. Y.
 Gudmundsson, G. . . Pittsburg, Pa.

Haight, Stephen S. . . New York City
 Hansel, Charles. . . New York City
 Harrison, E. W. . . Jersey City, N. J.
 Haskins, W. J. . . . New York City
 Hatton, T. C. . . . Wilmington, Del.
 Haviland, A. New York City
 Hazen, Allen. New York City
 Hemming, D. W. . . New York City
 Hendrick, C. W. . . New York City
 Herbert, H. M. . . Bound Brook, N. J.
 Hering, Rudolph. . . New York City
 Hill, A. B. New Haven, Conn.
 Hinds, F. A. . . . Watertown, N. Y.
 Hoag, S. W., Jr. . . New York City
 Hodgdon, F. W. . . Boston, Mass.
 Hodge, Henry W. . . New York City
 Hone, F. de P. . . . New York City
 Honness, G. G. . . Paterson, N. J.
 Hovey, O. E. Pencoyd, Pa.
 Howard, J. L. . . . Boston, Mass.
 Hoyt, John T. N. . . Albany, N. Y.
 Humphrey, R. L. . . Philadelphia, Pa.
 Hunt, Chas. W. . . New York City
 Hutton, W. R. . . . New York City

Irving, Walter E. . . New York City
 Irwin, J. C. Albany, N. Y.

Jacoby, Henry S. . . Ithaca, N. Y.
 Johnson, Alexander. . . New York City
 Johnston, J. P. . . . New York City

Kastl, A. E. Clinton, Mass.
 Kaufman, G. New York City
 Kelley, W. D. . . . New York City
 Kelly, Olaf M. . . . Brooklyn, N. Y.
 Khuen, Richard, Jr. . . Pencoyd, Pa.
 Kimball, George A. . . Boston, Mass.
 King, Paul S. New York City
 King, Wallace, Jr. . . New York City

- Knap, J. M. New York City
 Knowles, M. Philadelphia, Pa.
 La Chicotte, H. A. . . . Brooklyn, N. Y.
 Lee, W. B. Hillburn, N. Y.
 Leffingwell, F. D. . . . New York City
 Leisen, T. A. Wilmington, Del.
 Leonard, H. R. . . . Lansdowne, Pa.
 Leutzé, T. McC. . . . Albany, N. Y.
 Lewis, N. P. Brooklyn, N. Y.
 Liebmann, Alfred. . . . New York City
 Lindenthal, G. New York City
 Loomis, Horace. . . . New York City
 Low, George E. New York City
 Lowinson, Oscar. . . . New York City
 Ludwig, Alfred. . . . New York City
 Lundie, John. New York City
 Luster, W. H., Jr. . . . Elizabeth, N. J.
 Macdonald, Charles. . . . New York City
 MacGregor, R. A. . . . New York City
 Machen, H. B. New York City
 MacLay, W. W. Glens Falls, N. Y.
 Macnab, G. T. New York City
 McCann, Thos. H. . . . Hoboken, N. J.
 McComb, C. O. Watertown, N. Y.
 McKim, Alex. Rice. . . . New York City
 McMinn, T. J. New York City
 Magor, Basil. New York City
 Malukoff, A. J. New York City
 Manley, Henry. Boston, Mass.
 Martin, K. L. Brooklyn, N. Y.
 Martin, Wisner B. . . . New York City
 Mayer, Joseph. New York City
 Mead, Chas. A. Newark, N. J.
 Melius, L. L. Albany, N. Y.
 Merriman, Mansfield
 South Bethlehem, Pa.
 Merriman, T. New York City
 Merryman, W. C. . . . New York City
 Metcalf, Leonard. . . . Boston, Mass.
 Millard, Curtiss. . . . Springfield, Ill.
 Miller, Hiram A. . . . Clinton, Mass.
 Miller, Rudolph P. . . . New York City
 Minor, Edw. E. New Haven, Conn.
 Mixer, C. A. . . . Rumford Falls, Me.
 Meyer, Henry C. . . . New York City
 Modjeski, Ralph. . . . Chicago, Ill.
 Moisseiff, L. S. New York City
 Moore, W. H. New Haven, Conn.
 Morse, C. M. Buffalo, N. Y.
 Moses, P. R. New York City
 Moss, Robert E. . . . Bloomfield, N. J.
 Myers, C. H. New York City
 Myers, John H., Jr. . . . New York City
 Nelson, William. . . . Laconia, N. H.
 Nichols, C. H. New Haven, Conn.
 Odell, F. S. Port Chester, N. Y.
 Odell, R. I. Tomkins Cove, N. Y.
 Olney, L. F. Mahwah, N. J.
 Opdyke, S. B., Jr. . . . Philadelphia, Pa.
 O'Rourke, John F. . . . New York City
 Osborn, Frank C. . . . Cleveland, Ohio
 Osgood, J. O. New York City
 Oxholm, T. S.
 West New Brighton, N. Y.
 Parker, A. McC. . . . New York City
 Parker, C. J. Watertown, N. Y.
 Parker, M. S. Sherman, Wyo.
 Pegram, Geo. H. . . . New York City
 Peterson, P. A. Montreal, Can.
 Pierce, W. T. Boston, Mass.
 Piper, A. R. Sing Sing, N. Y.
 Pitts, Thos. D. . . . New York City
 Polk, W. A. New York City
 Pratt, Mason D. . . . Steelton, Pa.
 Pratt, W. A. Philadelphia, Pa.
 Prout, H. G. New York City
 Pruyn, F. L. Brooklyn, N. Y.
 Rafter, Geo. W. . . . Rochester, N. Y.
 Raymond, W. G. . . . Troy, N. Y.
 Rice, Geo. S. New York City
 Richardson, T. F. . . . Clinton, Mass.
 Ricketts, Palmer C. . . . Troy, N. Y.
 Ridgway, Robert. . . . New York City
 Roberts, William. . . . Waltham, Mass.
 Rogge, J. C. L. . . . New York City

- Rosenthal, A. A. . . . Mt. Vernon, N. Y.
 Rotch, William Boston, Mass.
 Rowland, C. B. . . . Brooklyn, N. Y.
 Ryder, E. M. T. . . . New Haven, Conn.

 Savage, Albert C. . . . New York City
 Sax, P. M. Philadelphia, Pa.
 Scarborough, F. W. . . . Richmond, Va.
 Schmidt, Max E. . . . New York City
 Schneider, A. New York City
 Schneider, C. C. Pencoyd, Pa.
 Senior, F. S. Holyoke, Mass.
 Shaler, Ira A. New York City
 Simpson, George New York City
 Skinner, F. W. New York City
 Smith, J. Waldo . . . Paterson, N. J.
 Smith, W. F. New York City
 Snow, J. P. Boston, Mass.
 Spencer, W. T. New Haven, Conn.
 Spooner, A. N. New York City
 Starrett, M. G. New York City
 Stearns, Frederic P. . . Boston, Mass.
 Steele, Henry M. . . . Savannah, Ga.
 Steffens, W. F. . . . New Haven, Conn.
 Stern, E. W. New York City
 Stevens, Alexander . . . New York City
 Stewart, J. H. New York City
 Stiger, J. S. Jr. . . . Mendham, N. J.
 Stoddard, Geo. C. . . . New York City
 Swain, Geo. F. Boston, Mass.
 Swindells, Jos. S. . . . Mt. Kisco, N. Y.

 Tainter, F. S. Far Hills, N. J.
 Tait, John G. New York City
 Taylor, Lucian A. . . . Boston, Mass.
 Taylor, W. J. Bound Brook, N. J.
 Theban, J. G. New York City
 Thomson, G. H. New York City
 Thomson, T. K. New York City
 Thompson, S. C. New York City
 Thornley, Julian New York City
 Tibbals, Geo. A. . . . Brooklyn, N. Y.
 Tingley, G. C. Providence, R. I.
 Tilden, C. J. Milton, Mass.
 Tillson, Geo. W. . . . Brooklyn, N. Y.

 Tomkins, Calvin New York City
 Travell, Warren B. . . . Orange, N. J.
 Treadwell, Lee Portsmouth, N. H.
 Tribus, Louis L. New York City
 Triest, W. G. New York City
 Trotter, Alfred W. . . . New York City
 Trout, Chas. E. New York City
 Turner, D. L. New York City
 Turner, E. K. Boston, Mass.
 Twyman, A. Pullman, Ill.

 Ulrich, Daniel New York City
 Upham, R. D. New York City

 Value, Beverly R. . . . New York City
 Van Winkle, E. B. . . . New York City
 Vickers, T. McE. . . . Philadelphia, Pa.
 Vielé, M. A. Wyncote, Pa.
 Vier, Henry New York City

 Wadsworth, J. E. Middleton, Conn.
 Wagner, J. C. Philadelphia, Pa.
 Walker, C. I. New York City
 Wallace, John F. Chicago, Ill.
 Wallace, J. H. New York City
 Ward, C. R. New York City
 Ware, R. W. Plainfield, N. J.
 Waterhouse, J. New York City
 Watkins, F. W. White Plains, N. Y.
 Webster, G. S. Philadelphia, Pa.
 Webster, Wm. R. Philadelphia, Pa.
 Whinery, S. New York City
 Whipple, G. C. Brooklyn, N. Y.
 White, T. S. Beaver Falls, Pa.
 Whitted, L. R. Norfolk, Va.
 Whitney, Frank O. . . . Boston, Mass.
 Wiggin, E. W. New Haven, Conn.
 Wiley, W. H. New York City
 Wilgus, W. J. New York City
 Wilkins, W. G. Pittsburg, Pa.
 Williams, G. S. Ithaca, N. Y.
 Wölfel, P. L. Pencoyd, Pa.
 Wright, J. Bodine New York City

 York, H. W. New York City

ANNOUNCEMENTS.

The House of the Society is open from 9 A. M. to 10 P. M. every day, except Sundays, Fourth of July, Thanksgiving Day and Christmas Day.

MEETINGS.

Wednesday, March 6th, 1901.—8.30 P. M.—A regular business meeting will be held. Ballots for membership and ballots on the proposed amendment to the Constitution will be canvassed, and a paper, entitled "Flow in the Sewers of the North Metropolitan Sewerage System of Massachusetts," by Theodore Horton, Assoc. M. Am. Soc. C. E., will be presented.

This paper was printed in the *Proceedings* for January, 1901.

Wednesday, March 20th, 1901.—8.30 P. M.—At this meeting a paper, entitled "Heavy Railway Construction in Wyoming," by J. I. Boggs, Assoc. M. Am. Soc. C. E., will be presented.

This paper is printed in this number of *Proceedings*.

ANNUAL CONVENTION OF 1901

The Thirty-third Annual Convention of the Society will be held at Niagara Falls, N. Y., on Tuesday, Wednesday, Thursday and Friday, June 25th, 26th, 27th and 28th, 1901.

The rule adopted by the Board of Direction, February 28th, 1899, provides that no formal papers shall be set down for presentation to the Annual Convention, but in lieu thereof discussion be asked for on all papers which have been published in *Proceedings* during the six months immediately preceding.

It also provides that special subjects of engineering interest which may have been suggested to and approved by the Committee on Publications shall also be presented for discussion.

The success and professional value of this method may be seen by reference to the publications, and the following list of subjects chosen for discussion at the last two conventions is given for the information of members.

List of Subjects Presented for Discussion at the Annual Conventions of 1899 and 1900.

"Should the use of the method of Wheel-Concentrations be discontinued in determining the Stresses in Railroad Bridges?

"In view of present knowledge of the Effect of Repeated Applications of Load, should Fatigue Formulas be used in Bridge Design?

- "(b) Should the Purification of the Sewage of Cities be compulsory, and is this feasible for Large Cities?
- "(c) Is Filtration the coming solution of the Pure-Water Question for Cities?
- "What is the Proper Friction Coefficient for use in the design of Riveted Steel Pipe?
- "What are the economic conditions under which Electricity may be profitably substituted for Steam in the operation of Branch Railroad Lines, and what are the engineering requirements to be considered in such substitution?
- "What is the present development of the so-called Telferage System for moving either Freight or Passengers? What are the conditions under which that System is preferable to movement by Rail, and what is its adaptability to still further application in competition with Rail Lines?
- "Height of Buildings.
- (1) What considerations should limit the height of buildings?
 - (2) Do recent developments in construction, sanitation, inter-communication and economy of administration, warrant the removal of all restrictions?
- "Recent Practice in Rails.

The progressive increase in weight; the increase in hardness, particularly in carbon; the sections in most general use; the effect of changes in weight, composition and section.

"Filtration of Water for Public Use.

The several processes now used for the removal of objectionable matter; their comparative sanitary effect, cost and reliability."

The only way of ascertaining what special subjects will be of interest as topics for discussion at the Convention of 1901 is by appealing to the membership for suggestions. Such suggestions, forwarded to the Secretary, will be presented to the Publication Committee.

The foregoing notice was printed in last month's issue, but it is regretted that, up to the present time, no suggestion of any kind has been received. The notice is reprinted now in the hope that some subjects, at least, may be brought by members to the attention of the Committee.

COMMITTEE ON THE PROPER MANIPULATION OF TESTS OF CEMENT.

The following members have been added to the Committee on the Proper Manipulation of Tests of Cements: Messrs. S. B. Newberry, R. L. Humphrey, Clifford Richardson and F. H. Lewis.

Mr. H. W. York has resigned from that Committee.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST.

(January 10th to February 13th, 1901.)

NOTE.—This list is published for the purpose of placing before the members of the Society the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS.

In the subjoined list of articles references are given by the number prefixed to each journal in this list.

- (1) *Journal, Assoc. Eng. Soc.*, 257 South Fourth St., Philadelphia, Pa., 80c.
- (2) *Proceedings, Eng. Club of Phila.*, 1122 Girard St., Philadelphia, Pa.
- (3) *Journal, Franklin Inst.*, Philadelphia, Pa., 50c.
- (4) *Journal, Western Soc. of Eng.*, Monadnock Block, Chicago, Ill.
- (5) *Transactions, Can. Soc. C. E.*, Montreal, Que., Can.
- (6) *School of Mines Quarterly*, Columbia Univ., New York City, 50c.
- (7) *Technology Quarterly*, Mass. Inst. Tech., Boston, Mass., 75c.
- (8) *Stevens Institute Indicator*, Stevens Institute, Hoboken, N. J., 50c.
- (9) *Engineering Magazine*, New York City, 30c.
- (10) *Cassier's Magazine*, New York City, 25c.
- (11) *Engineering* (London), W. H. Wiley, New York City, 35c.
- (12) *The Engineer* (London), International News Co., New York City, 35c.
- (13) *Engineering News*, New York City, 15c.
- (14) *The Engineering Record*, New York City, 12c.
- (15) *Railroad Gazette*, New York City, 10c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Street Railway Journal*, New York City, 35c.
- (18) *Railway and Engineering Review*, Chicago, Ill.
- (19) *Scientific American Supplement*, New York City, 10c.
- (20) *Iron Age*, New York City, 10c.
- (21) *Railway Engineer*, London, England.
- (22) *Iron and Coal Trades Review*, London, England.
- (23) *Bulletin, American Iron and Steel Assoc.*, Philadelphia, Pa.
- (24) *American Gaslight Journal*, New York City, 10c.
- (25) *American Engineer*, New York City, 20c.
- (26) *Electrical Review*, London, England.
- (27) *Electrical World and Electrical Engineer*, New York City, 10c.
- (28) *Journal, New England Water-Works Assoc.*, Boston, 75c.
- (29) *Journal, Society of Arts*, London, England.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium.
- (31) *Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand*, Brussels, Belgium.
- (32) *Memoires et Compte Rendu des Travaux, Soc. Ing. Civ. de France*, Paris, France.
- (33) *Le Génie Civil*, Paris, France.
- (34) *Portefeuille Economique des Machines*, Paris, France.
- (35) *Nouvelles Annales de la Construction*, Paris, France.
- (36) *La Revue Technique*, Paris, France.
- (37) *Revue de Mechanique*, Paris, France.
- (38) *Revue Générale des Chemins de Fer et des Tramways*, Paris, France.
- (39) *Railway Master Mechanic*, Chicago, Ill.
- (40) *Railway Age*, Chicago, Ill., 10c.
- (41) *Modern Machinery*, Chicago, Ill., 10c.
- (42) *Transactions, Am. Inst. Elec. Eng.*, New York City, 50c.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (44) *Journal, Military Service Institution*, Governor's Island, New York Harbor, 75c.
- (45) *Mines and Minerals*, Scranton, Pa., 20c.
- (46) *Scientific American*, New York City, 10c.
- (47) *Mechanical Engineer*, Manchester, England.
- (48) *Zeitschrift des Vereines Deutscher Ingenieure*, Berlin, Germany.
- (49) *Zeitschrift für Bauwesen*, Berlin, Germany.
- (50) *Stahl und Eisen*, Duesseldorf, Germany.
- (51) *Deutsche Bauzeitung*, Berlin, Germany.
- (52) *Rigasche Industrie-Zeitung*, Riga, Russia.
- (53) *Zeitschrift des oesterreichischen Ingenieur und Architekten Vereines*, Vienna, Austria.
- (54) *Den Tekniske Forenings Tidsskrift*, Copenhagen, Denmark.
- (55) *Ingeniøren*, Copenhagen, Denmark.
- (56) *Teknisk Tidsskrift*, Stockholm, Sweden.
- (57) *Teknisk Ugeblad*, Christiania, Norway.
- (58) *Proceedings, Eng. Soc. W. Pa.*, 410 Penn Ave., Pittsburg, Pa., 50c.
- (59) *Transactions, Mining Institute of Scotland*, London and Newcastle-upon-Tyne.
- (61) *Proceedings, Western Railway Club*, 225 Dearborn St., Chicago, Ill., 25c.
- (62) *American Manufacturer and Iron World*, 59 Ninth St., Pittsburg, Pa.
- (63) *Minutes of Proceedings, Inst. C. E.*, London, England.

NOTE.—There are no references made in this month's list to German and Swedish periodicals.

LIST OF ARTICLES.

Bridge.

- Northern Pacific Standard Bridge Plans.* Ralph Modjeski. (4) Feb.
 Bascule Drawbridge at Chicago, U. S. A.* (12) Feb. 15.
 The Concrete Bridge at Goat Island.* (14) Feb. 16.
 The New Middletown Drawbridge.* H. G. Tyrrell. (27) Feb. 16.
 The New Bridge Across the Rhine at Dusseldorf.* (19) Feb. 28.
 An Interlocked Cast-Iron Arch Solid Floor for Bridges.* (13) Feb. 28.
 The Gokteik Viaduct; Burmah Railways Ltd., Burmah.* (13) Feb. 28.
 A Great Swing Bridge.* (12) Mar. 1.
 East River Bridge No. 3.* (15) Mar. 1.
 The Brooklyn Caisson for the Manhattan-Brooklyn Bridge.* (14) Mar. 2.
 Brooklyn Tower Foundation, Third East River Bridge.* (13) Mar. 7.
 Floating a Drawbridge into Place.* (20) Mar. 7.
 Some Odd Jobs of Foundation Work. W. A. Rogers, M. Am. Soc. C. E. (15) Mar. 8.
 Moving the Hackensack River Drawbridge.* (14) Mar. 9.
 Le Pont Alexandre III, à Paris.* (35) Serial beginning Nov., 1900, ending Jan., 1901.
 Description du Pont Roulant sur l'Écluse Intermédiaire du Kattendijk, à Anvers.* Fr. de Winter. (30) Feb.

Electrical.

- Methods of Locating Faults in Underground Electric Cables.* H. W. Fisher. (58) Dec., 1900.
 European Types of High-Tension Alternators. C. F. Guilbert. (27) Serial beginning Jan. 19, ending Mar. 9.
 Capacity in Alternate Current Working. W. M. Mordey. (26) Serial beginning Jan. 25, ending Feb. 8.
 The Ganz System of Electric Traction.* (12) Serial beginning Jan. 25, ending Feb. 15.
 A Few Notes on the Construction of Telephone Lines in Norway.* (26) Feb. 8.
 Machine Tools and Outfit for Electrical Manufacturers. W. H. Booth. (26) Feb. 8.
 Fulham Electricity Works.* (26) Feb. 15.
 The Electric Tramway Accident at Liverpool.* (26) Feb. 15.
 The Schuckert Surface Contact System.* (26) Serial beginning Feb. 15, ending Feb. 22.
 Electrolysis in the District of Columbia. Grahame H. Powell. (27) Feb. 16.
 Power and Light for the Machine Shop and Foundry. Prof. Forrest R. Jones. (14) Serial beginning Feb. 16, ending Feb. 23.
 Dielectric Hysteresis. (26) Feb. 22.
 Electric Power Plant at the Hollertszug Iron Ore Mine, Herdorf on the Sieg, Germany.* (22) Feb. 22.
 London County Council Slot Electric Tramways.* (12) Feb. 22.
 London County Council Tramways.* (26) Feb. 22.
 Measurements of Dielectric Hysteresis.* W. E. Ayrlton. (26) Feb. 22.
 The London County Council and Electric Tramways.* (11) Feb. 22.
 Electrical Power in British Works. W. Geipel, M. I. E. E. (26) Serial beginning Feb. 22, ending Mar. 1.
 The Dynamo in Recent Telephone Practice. D. M. Bliss. (26) Feb. 23.
 The Independent Telephone Exchange at Rochester, N. Y. (27) Feb. 23.
 Cause and Effect of Electrolytic Action upon Underground Piping Systems.* A. A. Knudson. (28) Mar.
 Electric Power for Engineering Workshops: Individual and Group Driving vs. Long Line Shafing.* (10) Mar.
 Electrical Current.* F. A. W. Davis. (28) Mar.
 Rotary Transformers: Their History, Theory and Characteristics.* George W. Colles. (3) Mar.
 A New Slotted Conduit.* (26) Mar. 1.
 Electric Automobiles at Chislehurst. (26) Mar. 1.
 Some New German Electrical Pyrometers.* (22) Mar. 1.
 The Electric Lighting of the Victoria Embankment.* (26) Mar. 1.
 British Transformer Practice.* (27) Mar. 2.
 Development of Motor Fans. Alton D. Adams. (27) Mar. 2.
 Electrical Transmission from Coal Mines.* Fred Wilson Hart. (27) Mar. 2.
 Sectional Third Rail System on the Baltimore Belt Line.* (27) Mar. 2.
 Some Standard Types of Ferranti Alternators and Engines.* (17) Mar. 2.
 The Evolution of the Electric Sign.* E. Trier. (27) Mar. 2.
 The Safety Third-Rail System on the B. & O. Tunnel.* (17) Mar. 2.
 The Speed Control of Electric Motors. G. F. Packard. (20) Mar. 7.
 Calculating a Battery for a Given Output.* Dr. K. Norden. (27) Mar. 9.
 East Cleveland, O., Branch Telephone Exchange.* (27) Mar. 9.
 The Electrical Plant at the Sneyd Collieries, England.* (16) Mar. 9.
 The Slaby System of Wave-Selective Wireless Duplex Telegraphy.* (46) Mar. 9.
 A Test of a Gas Engine Electric Lighting Plant.* H. N. Cheney. (24) Mar. 11.
 Le Groupe Electrogène Piguet et Cie.—A. Grammont, à l'Exposition Universelle de 1900.* Paul Sarrey. (34) Feb.
 Les Dynamos Schuckert au Palais de l'Électricité.* (36) Feb. 10.
 La Traction Electrique sur les Grandes Lignes de Chemins de Fer et les Essais sur le Wannseebahn.* (36) Feb. 25.

* Illustrated.

Marine.

- Armour-Plates at the Paris Exhibition.* M. Baclé. (11) Serial beginning Jan. 18, ending Feb. 8.
 Submarine Boats. (12) Serial beginning Jan. 25, ending Feb. 15.
 Shipbuilding and Marine Engineering during 1900. (12) Serial beginning Jan. 25, ending Mar. 1.
 The American Submarine Boats.* Waldon Fawcett. (62) Feb. 14.
 The New United States Cruisers.* (11) Feb. 15.
 Steering Torpedoes by Wireless Telegraphy.* (46) Feb. 16.
 Launch of a Battleship at Jarrow. (12) Feb. 22.
 The New British Battleship *Russell*. (11) Feb. 22.
 Importance of Economizing Tonnage Facilities by Compact Stowage of Cargoes. Henry P. Jones. (13) Feb. 28.
 Equipment and Methods of the Indian Dock Yards.* A. C. Bowden. (9) Mar.
 H. M. S. *Good Hope* and *Bacchante*.* (12) Mar. 1.
 The Holland Submarine Boat. (12) Mar. 1.
 Recent Designs of Battleships and Cruisers for the United States Navy.* Rear-Admiral Philip Hichborn. (13) Mar. 7.
 Propulseur Centrifuge Hydraulique pour Bateaux.* A. Dumas. (33) Feb. 2.
 Le Paquebot Transatlantique *Deutschland*.* S. Gradier. (33) Serial beginning Feb. 16, ending Feb. 23.

Mechanical.

- Notes on Traveling Cranes.* Gerald E. Flanagan. (58) Oct., 1900.
 Manufacture of Water-Gas at the Forty-fourth Street Station, New York.* (46) Serial beginning Jan. 19, ending Feb. 16.
 Power Gas and Large Gas Engines. (26) Serial beginning Jan. 25, ending Feb. 15.
 Some Experiences of Motor Bicycles. Joseph Pennell. (29) Feb. 8.
 The Manufacture and Use of Wire Ropes.* (22) Feb. 8.
 Wheel Lathe v. Boring Mill.* (12) Feb. 8.
 Hardness or the Workability of Metals.* W. J. Keep. (47) Feb. 9.
 Tests of an Experimental Locomotive Boiler. (47) Feb. 9.
 Coke Ovens as Gas Works. Dr. H. Welchell. (62) Feb. 14.
 Engine and Generator Builders' Engine Type Units for Power Purposes. H. C. Ebert. (20) Feb. 14.
 Some Notes on Central Station Heating. (20) Feb. 14.
 The Fraser-Talbot Gas Producer.* (20) Feb. 14.
 American Straightening, Shearing and Punching Machinery.* (22) Feb. 15.
 The Belleville Boiler. (26) Feb. 15.
 A New Portland Cement Mill in the Gas Fields of Kansas.* G. P. Grimsley. (16) Feb. 16.
 A 1 000-Kw. Parsons Steam Turbine.* (47) Feb. 16.
 The Panhard-Levassor Automobile.* (19) Feb. 16.
 The Use of Blast-Furnace Gases in Gas Engines.* (19) Feb. 16.
 Vanderbilt Locomotive Boiler.* (46) Feb. 16.
 General Gas Works Machinery for the Philippines.* (24) Feb. 18.
 Record of Rod Mills and What Has Been Accomplished. William Garrett. (62) Feb. 21.
 The Hooper Pneumatic Concentrator and Drier.* (20) Feb. 21.
 A New Underfeed Stoker.* (12) Feb. 22.
 Babcock and Wilcox Boilers on the S.S. *Martello*.* (11) Feb. 22.
 Kennedy's Semi-Dry Brick Press.* (11) Feb. 22.
 Mica Insulation for Steam Boilers and Pipes.* (11) Feb. 22.
 Petroleum Fuel for Ships: The Theory Exploded. (22) Feb. 22.
 The Kaselowsky-Protz Hydraulic Pump.* Fr. Frolich. (22) Feb. 22.
 Corliss Valve Engines and Gears.* Geo. Windeler. (47) Feb. 23.
 Light Lathes and Screw Machines.* John Ashford. (47) Feb. 23.
 West's Improved Machine for Charging Retorts.* (24) Feb. 25.
 An Economical Steam Power Plant and What It Teaches. Geo. H. Barrus. (10) Mar.
 Continental Steam Engines as Seen at the Paris Exhibition.* W. D. Wansbrough. (10) Mar.
 Economy in Fuel Combustion and Steam Generation. William Wallace Christie. (9) Mar.
 Heating from Central Stations—A Comparison with Private Heating Plants. Alton D. Adams. (60) Mar.
 Late Practice in Utilising Blast Furnace Gas as a Gas Engine Fuel.* William H. Booth, M. Am. Soc. C. E. (10) Mar.
 Soldering Aluminium. Joseph Allison Steinmetz. (10) Mar.
 The New Plant of the Franklin Air Compressor Co.* (15) Mar. 1.
 The Rock Drill.* (22) Mar. 1.
 The Kress Aeroplane.* (46) Mar. 2.
 The Stirling Water-Tube Boiler.* (47) Mar. 2.
 Gas Lighting at the Paris Exposition. Walter S. Allen. (24) Mar. 4.
 Remarks on Gas Purification.* S. J. Fowler. (24) Mar. 4.
 Flywheel Explosions. Charles H. Manning. (13) Mar. 7.
 Some Interesting Troubles with Gas Engines. Albert Stritmatter. (62) Mar. 7.

* Illustrated.

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Mechanical—(Continued).

- An Improved Gasoline Automobile.* (46) Mar. 9.
 Some Sketches of Gas Governors.* J. J. Humphreys, Jr. (24) Mar. 11.
 Les Ascenseurs à l'Exposition de 1900.* P. Dumesnil. (33) Serial beginning Jan. 19, ending Feb. 2.
 Engrenement des Vis et Roues Hélicoïdales avec Profils Suivant une Developpante de Cercle à Cycloïde et Son Influence sur la Durée des Engrenages.* (37) Jan. 31.
 Utilisation des Gaz de Hauts Fourneaux et de Fours à Coke. E. Deschamps. (37) Jan. 31.
 Essais de Moteurs à Gaz et de Gazogènes à la Station Centrale à Gaz Pauvre des Tramuways de Cassel, près Dunkerque (Nord).* (33) Feb. 23.
 Appareil Ripper pour Apprécier à Chaque Instant le Travail d'un Moteur à Vapeur.* (36) Feb. 25.

Metallurgical.

- A Modern American Blast Furnace.* Arthur C. Johnston. (1) Jan.
 The British Columbia Copper Company's Smelting Works at Greenwood, B. C.* Paul Johnson. (16) Feb. 16.
 Notes on Tuyeres.* John M. Hartman. (20) Feb. 21.
 American Steel and Wire Company's New Blast Furnace at Neville Island.* Christian Larsen. (62) Feb. 28.
 Centrifugal Casting.* A. E. Fay. (20) Feb. 28.
 Chlorination Mills at Cripple Creek, Colorado.—The Methods Used in Handling the Ore and the Application of the Process.* Prof. Arthur Lakes. (45) Mar.

Military.

- A Brief Sketch of the Essential Requisites of "Powder" as Distinguished from Explosives. Dr. W. J. Williams. (3) Mar.
 Nordenfelt's Quick-Firing Field Artillery.* (11) Mar. 1.
 The Manufacture of American Ordnance.* Waldon Fawcett. (62) Mar. 7.
 Inconvénients du Béton de Ciment Armé dans la Construction des Ouvrages de Fortification. Adrien Hallier. (33) Feb. 9.

Mining.

- Winding from Great Depths.* (12) Serial beginning Mar. 16, 1900, ending Feb. 22, 1901.
 Hydraulic Excavation. Latham Anderson. (1) Jan.
 The South Hetton Coal Company's Collieries and Their Equipment.* (22) Serial beginning Feb. 1, ending Feb. 15.
 The Testing of Winding Ropes in the Province of Anhalt, Germany. Frank H. Probert. (13) Feb. 14.
 Coal Mine Foremen and Labor-Saving Devices. L. C. Morganroth. (16) Serial beginning Feb. 16, ending Feb. 23.
 Mining Practice at Rossland, British Columbia.* R. B. Brinsmade. (45) Mar.
 The Windber Mine: A Description of the System of Underground Haulage and Mining Methods as Installed and Used. J. S. Cunningham. (45) Mar.
 Wire Ropes. J. T. Beard. (45) Mar.
 Hoisting from Deep Shafts.* Leon Poussigue. (16) Mar. 9.
 L'Exploitation des Mines à l'Exposition de 1900.* H. Schmerber. (33) Serial beginning Feb. 2, ending Feb. 23.

Miscellaneous.

- Engineering Opportunities in Central and Southwestern Asia.* Alexander Hume Ford (9) Mar.
 Influence of the Exposition on the French Iron and Steel Industry. Henri Guérin. (9) Mar.
 The Outlook of the World's Timber Supply. Dr. W. Schlich. (29) Mar. 1.

Municipal.

- Street Lighting of Cities.* Henry H. Humphrey. (1) Jan.
 The Renovation of Havana.* (14) Serial beginning Jan. 19, ending Feb. 16.
 The New Road from Enzeli to Teheran.* (12) Serial beginning Feb. 1, ending Feb. 15.
 Municipal Electric Lighting in Chicago. Edward B. Ellicott. (14) Feb. 23.
 Comparison of Cost of Asphalt Pavements. (60) Mar.
 Landscape Problems in the Improvement of Spot Pond Reservoir, Metropolitan Water-Works.* Frederick Law Olmsted, Jr. (28) Mar.
 Repairing Asphalt Pavements in Chattanooga.* Robt. Hooke. (60) Mar.
 The Block Asphalt Pavements of Pontiac, Mich. William J. Fisher. (60) Mar.
 Municipal Improvements at Chattanooga, Tenn.* (13) Mar. 7.

Railroad.

- Hot Driving Boxes on Locomotives. M. E. Wells. (61) Jan.
 Hydrostatic Tools in Railway Service.* George L. Gillon. (61) Jan.
 Heavy Motor Traffic in France. George Forestier. (47) Serial beginning Jan. 12, ending Jan. 19.
 A Large Roundhouse at Clinton, Ia.; Chicago and Northwestern Ry.* (13) Feb. 14.

* Illustrated.

Railroad—(Continued).

- A Typical Suburban Service: How the Chicago and Northwestern Carries the Rural Residents to and from Chicago. (40) Feb. 15.
- Railway Couplings.* (11) Feb. 15.
- Readville Car Shops—New York, New Haven and Hartford.* (15) Feb. 15.
- The Hudson River Railroad.* Herbert T. Walker. (15) Feb. 15.
- Construction of the East Boston Subway and Tunnel.* (18) Feb. 16.
- New Hopper Coal Cars on the Northern Pacific Ry.* (18) Feb. 16.
- The Illinois Central Semi-Centennial.* (18) Feb. 16.
- Finishing Temperatures for Steel Rails.* Robert W. Hunt. (20) Feb. 21.
- Stadia Surveys for Railway Location. H. P. Boardman. (13) Feb. 21.
- A Novel Electric Railway.* (26) Feb. 22.
- Some Features of Railway Travelling, Past and Present. Frederick McDermott. (29) Feb. 22.
- The Growth of the Illinois Central. J. T. Harahan. (40) Feb. 22.
- The Price Patent Friction Brake.* (26) Feb. 22.
- 70 000-lb. Capacity Box Cars for the Northern Pacific Ry.* (18) Feb. 23.
- Some Engineering Features of the Grand Central Station, New York.* (14) Feb. 23.
- Some Features of Railway Tunnel and Subway Construction. (18) Feb. 23.
- A Model Oil House, Chicago and Northwestern Railway.* (39) Mar.
- Actual Working of American Locomotives on British Railways.* Charles Rous-Marten. (9) Mar.
- Compound Consolidation Freight Locomotives, with Wide Firebox, New York Central and Hudson River Railroad.* (25) Mar.
- Express Passenger Engines: Madras Railway.* (21) Mar.
- New Car Shops, New York, New Haven and Hartford Railroad, at Readville, Mass.: Details of the Buildings.* (25) Mar.
- Safety Appliances in the United States. (39) Mar.
- 70 000 Pounds Capacity Flat Car, Northern Pacific Railroad.* (39) Mar.
- The New Class "J" Passenger Locomotive of the Lake Shore and Michigan Southern Railway.* (25) Mar.
- The Use of Liquid Fuel in Locomotives.* James Holden. (39) Mar.
- French Rolling Stock at the Paris Exhibition.* (11) Mar. 1.
- Further Economies in Coal and Ore Handling.* John M. Goodwin. (15) Mar. 1.
- "Manbills" for Waybills in Freight Traffic. (40) Mar. 1.
- The Cascade Tunnel on the Great Northern Railway, U. S. A.* (12) Mar. 1.
- Foreign Locomotives at the Exposition of 1900.* (19) Mar. 2.
- London's First Electric Tramway.* Frederick A. Talbot. (17) Mar. 2.
- New Power Station and Elevated Railway System in Boston.* (17) Mar. 2.
- Notes on the City and Suburban Railway, Portland, Ore.* (17) Mar. 2.
- Snow Fence. (18) Mar. 2.
- Some Recent Electric Railway Construction for San Francisco.* S. L. Foster. (17) Mar. 2.
- Street Car Hoods or Canopies.* W. E. Partridge. (17) Mar. 2.
- The Street Railway System of Lisbon.* F. A. Wardlaw. (17) Mar. 2.
- Two Interesting Schenectady Locomotives.* (18) Mar. 2.
- Difficult Earthwork Construction on the Copper Range R. R.* (13) Mar. 7.
- The Quality of Steel for Rails. (13) Mar. 7.
- Certain Considerations in Designing Yards. W. L. Derr. (15) Mar. 8.
- Freight Yards of the Chicago Transfer & Clearing Co.* (15) Mar. 8.
- Handling Locomotive Coal on the New York Central.* (15) Mar. 8.
- How to Study the History of a Rail.* Stephen W. Baldwin. (15) Mar. 8.
- Pneumatic Interlocking at Wayne Junction.* (15) Mar. 8.
- Preservation of Sleepers in England and Continental Countries.* P. H. Dudley. (15) Mar. 8.
- The Engineering Department of the New York Central.* (15) Mar. 8.
- The Oiled Roadbed on the Long Island Railroad. C. L. Addison. (15) Mar. 8.
- The Personnel, Material and Methods of a Railroad. L. F. Loree. (15) Mar. 8.
- Tunnels on the West Virginia Short Line Railroad.* J. V. Davies. (15) Mar. 8.
- Uniform Track Structure.* M. W. Thomson. (15) Mar. 8.
- Ventilation of the East Mahanoy Tunnel—Philadelphia & Reading.* Theodore Voorhees. (15) Mar. 8.
- Electric Traction for Heavy Railroad Service. (17) Mar. 9.
- The Progress of the Siberian Railway.* (19) Mar. 9.
- L'Exposition Universelle de 1900: Notice sur le Matériel et les Objects Exposés par la Compagnie des Chemins de Fer du Midi.* (38) Jan.
- Les Locomotives Hongroises à l'Exposition de 1900. Raymond Godfrenaux. (38) Jan.
- Les Locomotives Allemandes à l'Exposition.* Daniel Bellet. (36) Serial beginning Jan. 25, ending Feb. 10.
- Appareils pour la Manœuvre Électrique des Signaux et des Aiguilles: Système Siemens et Halske.* René Philippe. (34) Feb.
- Les Locomotives à l'Exposition de 1900: Locomotives Compound Express à 2/4 Essieux Accouplés des Chemins de Fer du Nord-Est et du Central Suisses.* F. Barbier. (33) Feb. 2.
- Le Chemin de Fer à Plans Inclinés Mobiles.* Albert Reyner. (36) Feb. 25.
- Locomotive à Grande Vitesse des Chemins de Fer de l'État Prussien, avec Surchauffeur de Vapeur (Système Wilhelm Schmidt).* A. Morizot. (36) Feb. 25.

* Illustrated.

Sanitary.

- "Airedale" Feed-Water Heater.* (47) Feb. 9.
 Cleaning a Large Brick Sewer in Hartford, Conn. Frederick L. Ford. (14) Feb. 16.
 The Septic Tank Experiments at Pawtucket.* (14) Feb. 16.
 Ventilation and Heating of the American Exchange National Bank, New York.* (14) Feb. 16.
 Garbage as Fuel for Steam Production. W. L. Hedenburg. (60) Mar.
 The Bacterial Self-Purification of Streams. (19) Mar. 2.
 Ventilating and Heating the Boston Music Hall.* (14) Mar. 2.
 The Shelby, Ohio, Sewerage System.* J. B. Weddell. (14) Mar. 9.
 Ventilation and Heating in a Paterson, N. J., Schoolhouse.* (14) Mar. 9.

Structural.

- The New Plant of the Curtis Publishing Co.* Charles Henry-Davis and John S. Griggs, Jr. (14) Serial beginning Feb. 23, ending Mar. 9.
 Concrete Mixing and Depositing Machine.* (13) Feb. 28.
 A Discussion of Recent Developments in the Fireproofing of Wood.* Joseph L. Ferrell. (3) Mar.
 American Slag Cements. William Kendrick Hatt. (14) Mar. 2.
 Boyer Machine Company's Plant at Detroit.* (40) Mar. 8.
 The Cramp Machine Shop and Power House.* (14) Mar. 9.
 Les Emplois de La Lave de Volvic dans l'Industrie.* M. Seurat. (33) Feb. 9.

Topographical.

- American Mine Surveying Instruments.* (22) Feb. 8.
 Controlling a Topographical Survey. Wm. C. Bunnell. (13) Feb. 14.
 Geodesy. Wilfrid Airy, M. Inst. C. E. (11) Feb. 15.

Water Supply.

- Water Power by Direct Air Compression. William O. Webber. (1) Jan.
 Notes on Designing and Constructing Slow Sand Filters. James H. Fuertes, M. Am. Soc. C. E. (14) Serial beginning Jan. 26, ending Feb. 9.
 The Evolution of the Oxygen Absorption Test in Water and Sewage Analysis. Prof. J. W. Weems. (14) Serial beginning Jan. 26, ending Feb. 9.
 The Bridgeport Wheel Pumps.* Ossian Guthrie (4) Feb.
 Tunnel and Crib Construction in Chicago.* Paul G. Brown. (4) Feb.
 The Arad Water-Works and Fischer Plate Filters.* (11) Feb. 15.
 Ingenious Water-Wheels.* Waldon Fallcett. (46) Feb. 16.
 The New Wheelplit of the Niagara Falls Power Company.* (14) Feb. 16.
 Removal of Iron from the Water Supply of Superior, Wis.* R. D. Chase, Assoc. M. Am. Soc. C. E. (13) Feb. 21.
 The Water-Power Plant at Massena, N. Y.; St. Lawrence Power Co.* (13) Feb. 21.
 An Inexpensive Gage for use with the Venturi Meter.* Charles P. Paulding. (13) Feb. 28.
 Removal of Some Submerged Water Mains at Chelsea, Mass.* Caleb Mills Saville, Assoc. M. Am. Soc. C. E. (13) Feb. 28.
 A Report on Trial of 30000 000 Gallon Pumping Engine at the Chestnut Hill High-Service Station of the Metropolitan Water-Works, made May 1 and 2, 1900. Will J. Sando. (28) Mar.
 Stand Pipes and Elevated Reservoirs.* George S. Pierson. (60) Mar.
 Subterranean Waters. Charles Morris. (3) Mar.
 The Purification of the Washington Water Supply. Rudolph Hering, George W. Fuller and Allen Hazen. (14) Mar. 2.
 Étude sur la Solubilité du Sulfate de Chaux.* M. Boyer-Guillon. (37) Jan. 31.
 Usine Hydro-Electrique du Saut-Mortier: Création de la Chute sur l'Ain.* J. Claudet. (33) Feb. 9.

Waterways.

- Design for a Controlling Works at the Chicago End of the Drainage Canal.* Ossian Guthrie. (4) Feb.
 The Improvement of the Chicago River. (4) Feb.
 Sea-Going Hydraulic Dredges for the East Channel Improvement, New York Harbor.* (13) Feb. 14.
 Shall a Canal be Built from the Lakes to the Sea? William G. Raymond. (15) Feb. 15.
 Beard's Contour System of Groynes.* (11) Feb. 22.
 Conneaut Harbor Ore Docks.* (15) Feb. 22.
 Powerful Nine-Ton Dipper Dredge.* (46) Feb. 23.
 A Large Single-Rope Dipper Dredge.* (13) Feb. 23.
 The Port of London. W. H. Wheeler, M. Inst. C. E. (12) Mar. 1.
 Metal Casing for Light-House Tower at Grande Pointe au Sabie.* (14) Mar. 2.
 Drilling and Blasting Submerged Rock. (14) Mar. 9.
 Le Maréosphon: Appareil Automatique de Préservation Contre les Inondations de Marée.* G. Willems. (30) Feb.
 Les Nouvelles Installations Maritimes du Port d'Ostende.* A. Cadola. (30) Feb.
 Le Port de Naples.* C. de Cordemoy. (36) Feb. 25.

* Illustrated.

NEW BOOKS OF THE MONTH.

Unless otherwise specified, books in this list have been donated to the Library by the Publisher.

SURVEYING AND LEVELLING INSTRUMENTS

Theoretically and Practically Described for Construction, Qualities, Selection, Preservation, Adjustments and Uses; with other Apparatus and Appliances used by Civil Engineers and Surveyors in the Field. By William Ford Stanley. Third Edition. London, E. & F. N. Spon, 125 Strand; New York, 12 Cortlandt St., 1901. Cloth, 8 x 5 ins., 562 pp., illus. \$3. (Donated by the Author.)

In this edition the author has endeavored, as far as practicable, to take advantage of the many suggestions offered by professional men since the first publication of the work. The Contents are: Introduction; The Telescope as a Part of a Surveying Instrument; The Magnetic Compass as a Part of a Surveying Instrument or Separately; Levels; Levelling Staves; Division of the Circle and Methods Employed in Taking Angles; Theodolites; Specialties in Modern Forms of Transit; Plain Theodolites in Which the Transit Principle is not Employed; Large Theodolites Used only for Geodetic Surveys; Mining Survey Instruments; Instruments to Measure Subtense or Tangential Angles to Ascertain Distances; Instruments Constructed Especially for Facility of Taking Inclinations; Instruments of Reflection; Graphic Surveying Instruments and Appliances Connected Therewith; Instruments for Measuring Land and Civil Works Directly; Stations of Observation; Measurement of Altitudes by Differences of Atmospheric Pressure; Miscellaneous Surveyors' and Engineers' Instruments, Appliances and Accessories. There is an index of five pages.

SCHERZER ROLLING LIFT BRIDGES.

An Illustrated Description of Rolling Lift Bridges as Erected by the Scherzer Rolling Lift Bridge Company. By Albert H. Scherzer. Cloth, 11 x 14 ins., 67 pp., 23 plates. Chicago, 1901. \$10. (Donated by Albert H. Scherzer.)

This is a description of rolling lift bridges and an explanation of the relative advantages of bascule bridges as compared with swing spans. There is also a discussion of the advantages of bridges of the rolling lift type over those with pivots.

DONATIONS TO THE LIBRARY.

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 Am. Soc. of Mech. Engrs. 1 bound vol., 1 pam.
 Atchison, Topeka & Santa Fé Ry. Co. 1 pam.
 Baltimore & Ohio R. R. Co. 5 pam.
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 Croes, J. J. R. 6 bound vol., 107 pam.
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 Gemmell, R. C. 1 pam.
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 Hutton, N. H. 7 pam., 4 phot.
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 Japan-Imperial Earthquake Investigation Com. 2 vol.
 Lawton, Wm. H. 2 maps.
 Leutzé, Trevor McC. 1 bound vol.
 Lewis, N. P. 5 bound vol., 2 vol.
 Liverpool Eng. Soc. 1 vol.
 Martin, Wisner B. 3 bound vol., 1 pam.
 Merchants' Assoc. of New York. 1 pam.
 Mich. Univ. 1 pam.
 Moncrieff, A. B. 4 vol.
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 U. S. Bureau of Education. 1 bound vol.
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 U. S. Dept. of Agriculture. 1 pam.
 U. S. Geological Surv. 4 maps.
 U. S. Treasury Dept. 1 vol.
 Wanier, A. G. 45 bound vol., 17 vol.
 Unknown Donor, 1 pam.

MEMBERSHIP.

ADDITIONS.

MEMBERS.

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Asst. Man. and Eng., Conrey Placer Mining	{ Assoc. M.	June 1, 1892
Co., Virginia City, Madison Co., Mont.....	{ M.	Feb. 6, 1901
CHESTER, JOHN NEEDELS,	{ Jun.	Dec. 6, 1892
600 Lewis Blk., Pittsburg, Pa.	{ Assoc. M.	Dec. 5, 1894
	{ M.	Mar. 6, 1901
SMITH, LEONARD CHARLES LINDSAY,		
59 Woolsey St., Astoria, Long Island City, N. Y.		Mar. 6, 1901
STRONG, MASON ROMEYN,		
Bridge Eng., Erie and N. Y., Susq. & Western R. Rds., 237		
Lexington Ave., Passaic, N. J.		Mar. 6, 1901

ASSOCIATE MEMBERS.

BISHOP, WILLIAM ISRAEL,		
40 McGill College Ave., Montreal, Que., Canada.		Feb. 6, 1901
CARLILE, THOMAS JENES,	{ Jun.	Mar. 3, 1896
4215 Chestnut Street, Philadelphia, Pa.	{ Assoc. M.	Mar. 6, 1901
FICKES, EDWIN STANTON,		
Care, Pittsburg Reduction Co., Pittsburg,	{ Jun.	Jan. 4, 1898
Pa.	{ Assoc. M.	Feb. 6, 1901
FOX, WALTER GORDON,		
Asst. Eng., Guayaquil & Quito Ry., Guayaquil, Ecuador.		Jan. 2, 1901
LYON, WALLACE CHITTENDEN,		
Care, Supervising Architect's Office, Treasury Dept.,		
Washington, D. C.		Feb. 6, 1901
REYNOLDS, JUSTIN OAKLEY,	{ Jun.	Oct. 6, 1896
2006 Washington Ave., New York City.	{ Assoc. M.	Dec. 5, 1900

ASSOCIATES.

KELLEY, JAMES AUGUSTUS,		
1921 Dennie St., Philadelphia, Pa.		Mar. 5, 1901
TENNEY, GEORGE OLIVER,	{ Jun.	Sept. 7, 1887
Contractor, Spartanburg, S. C.	{ Assoc.	Feb. 5, 1901

JUNIORS.

CARPENTER, ALLAN WADSWORTH,		
Asst. Eng., N. Y. C. & H. R. R. R., 502 Grand Central		
Station, New York City.		Mar. 5, 1901
CORRIGAN, GEORGE WASHINGTON,		
Harrisonville, Mo.		Feb. 5, 1901

	Date of Membership.
DE LA MORA, MANUEL, Ap. 319, Guadalajara, Mexico	Dec. 28, 1900
DOUGAN, JAMES, 453 West 19th St., New York City	Mar. 5, 1901
GIFFORD, HARRY VAN VLECK, 2127 Monroe St., Toledo, Ohio	Mar. 5, 1901
NUTTER, CHARLES HERBERT, 144 Lexington Ave., New York City	Feb. 5, 1901
SPENCER, LOUIS BERNARD, 2555 Jefferson Ave., Ogden, Utah	Oct. 31, 1899
WELLS, CLINTON GLENCAIRN, Electrical Com. of Baltimore, Office of Chf. Eng., Balti- more, Md.	Mar. 5, 1901

DEATHS.

HISLOP, JOHN	Elected Member May 1st, 1895; died Feb. 22d, 1901.
HOWELL, GEORGE WASHINGTON	Elected Member May 2d, 1888; died Feb. 15th, 1901.
PENNYPACKER, LEVIS PASSMORE	Elected Associate Member Apr. 1st, 1891; died Jan. 30th, 1901.
RUSLING, GEORGE McCracken	Elected Member Nov. 1st, 1882; died Feb. 26th, 1901.
TASKER, STEPHEN PASCHALL MORRIS ..	Elected Fellow Sept. 20th, 1872; precise date of death not known.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

INSTITUTED 1852.

PROCEEDINGS.

NOTE.—This Society is not responsible, as a body, for the facts and opinions advanced in any of its publications.

SOCIETY AFFAIRS.

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MINUTES OF MEETINGS.

OF THE SOCIETY.

April 3d, 1901.—The meeting was called to order at 8.40 P. M.; President J. James R. Croes in the chair; Charles Warren Hunt, Secretary; and present, also, 90 members and 19 visitors.

The minutes of the meetings of March 6th and 20th were approved as printed in *Proceedings* for March, 1901.

The Secretary presented the following letter:

PHILADELPHIA, March 25th, 1901.

“THE AMERICAN SOCIETY OF CIVIL ENGINEERS,
New York.

“GENTLEMEN,—I would respectfully ask that a Committee be appointed to investigate and report on Standard Rail Sections.

“The reasons for asking for this Committee are that rails of 80 lbs. and over are not giving good service. This is true of all heavy rails whether rolled to the A. S. C. E. Sections or others. The cause of the trouble is now well known, it being due to the large mass of metal

in the head carrying the heat so much longer than the thin metal in the flanges, thus preventing the work of rolling on the head at sufficiently low temperature to break up the coarse grain and produce the tough, good-wearing rails desired.

"The beneficial effect of rolling at a low temperature has been well known for years, but until recently no very decided steps had been taken to roll the heavy rails at a low temperature, on account of the chances of decreasing the large daily output of the rail mills.

"Attempts have been made to cool the head of the rails with streams of water, but has not proved entirely satisfactory. Others held back the rails in rolling, but that interfered with the output. Others tried to get better results by using higher carbon in these heavy rails. This has not been satisfactory, as the higher the carbon in the steel, the more sensitive it is to the injurious effects of high finishing temperature. Quite recently the Carnegie Steel Co. changed their rail mill and put in an intermediate cooling bed, where several rails are held for 70 to 80 seconds each, without decreasing the output of the mill. The head of one rail being in contact with flange of one next to it tends to equalize the heat, and the final work of rolling (one pass being taken) is done at a low temperature. Rails rolled by this method have a finer grain in the head and are much tougher under the drop.

"Another illustration of the beneficial effect of rolling rails at a low temperature, is in the re-rolling of heavy rails that have not given good service. The improvement is so marked that it has been said, 'the only way to get a good rail is to re-roll it.' This improvement is due to the annealing in heating, to the low temperature required in re-rolling, and the toughening effect of the work of rolling at this low temperature. These same beneficial results can be obtained by rolling the rails in the first place with the proper amount of work at a low enough temperature. But the problem has been very much complicated by the section of the heavy rails and the use of high carbon steel in them.

"To overcome these difficulties, the simplest way seems to be to put more metal in the flanges of the heavy rails that they may carry the heat more equally with the head and enable the work of rolling to be put on the head at a sufficiently low temperature. This can be done, by either taking the metal from the head and adding it to the flange, or adding additional metal to the bottom of the flange, leaving the section of the rail the same in all other particulars.

"Investigation may show that only a very slight addition of metal to the flange may be required, as several parties are experimenting on improved methods of rolling, all tending to control the finishing temperature, but the recognition by this Society (by appointing the Committee asked for) of the well-known fact, that the heat treatment of steel is as important as the chemical composition of the metal, will encourage the manufacturers of rails to renewed efforts.

"Whatever method may be decided upon, some good, reliable check of the finishing temperature should be used. Three have been suggested: The use of the pyrometer, the color of the finished rails, and the amount of shrinkage of the hot rail cut at the saw to the normal temperature. This latter is the simplest of all and best adapted to the purpose.

"Yours truly,

"WM. R. WEBSTER,

"M. Am. Soc. C. E."

Sanitary—(Continued).

- The Heating and Ventilating Plant of the Boyer Machine Company.* (20) Apr. 4.
 The Septic Tank at Marion, Iowa.* (14) Apr. 6.
 Chauffage Mixte par la Vapeur et l'Eau Chaude à Basse Pression.* F. de la Croix. (31) vol. xxxiii, Pt. 4.

Structural.

- An Experiment with Wet and Dry Concrete.* Irving Hitz. (4) Dec.
 A Test of the Strength of Rapp Floor Arches. Frederic H. Fay. (1) Feb.
 Expanded Metal as Used in Fireproof Building Construction and Other Work.* William M. Bailey. (1) Feb.
 Description of Ransome System of Concrete Steel Floors.* M. C. Tuttle. (1) Feb.
 Test of Roebbling Fireproof Floors.* Andrew W. Woodman. (1) Feb.
 A Review of Concrete-Metal Construction. Chas. M. Kurtz. (1) Feb.
 The Steel Skeleton Construction of a Tall Office Building. J. S. Branne. (1) Feb.
 Some Engineering Features in the Development of a Country Estate.* (14) Mar. 16.
 A Concrete-Iron Chimney.* (15) Mar. 22.
 Specifications for Iron and Steel. (40) Mar. 22.
 The Foundations of the New Mutual Life Insurance Building, New York City.* T. Kennard Thomson, M. Am. Soc. C. E. (13) Mar. 28.
 Concrete Construction. (18) Mar. 30.
 La Reprise en Sous-Ceuvre de Divers Batiments au Quai d'Orsay.* H. de la Brosse. (38) Feb.
 Hospice Intercommunal de Bagnolet, les Lilas, Pantin et le Pré-Saint-Gervais (Seine).* E. Rivoalen. (35) Mar.

Topographical.

- Primary Triangulation and Precise Levels of the United States Government Surveys.* Herbert M. Wilson. (13) Apr. 4.

Water Supply.

- Self-Purification of Polluted Water-Courses. (14) Mar. 16.
 Water Service. (18) Mar. 16.
 Covering Water Filters. (14) Mar. 23.
 The Sand Filters at Whitestown, N. Y.* William G. Stone. (14) Mar. 30.
 A New Method of Manufacturing Steel Pipe.* (46) Mar. 30.
 Water-Softening Plant at Langwith Colliery. J. G. Shearer. (45) Apr.
 A New Pipe-Cutting Machine.* (13) Apr. 4.
 The Water Supply of Paris.* (13) Apr. 4.
 Les Tuyaux en Fonte Frettés d'Acier, de la Société Anonyme des Hauts Fourneaux et Fonderies de Pont-à-Mousson. J. de la Pallière. (34) Mar.
 La Station Hydro-Electrique de Sarpasfos (Norwège). (33) Mar. 16.

Waterways.

- The River and Harbor of Chicago. R. B. Wilcox. (4) Dec.
 New Dock and Harbor Works in the East of Scotland.* (11) Mar. 8.
 A Canal Aqueduct Over the Lake Shore.* (40) Mar. 15.
 New C. M. & St. P. Ore Dock at Escanaba, Mich.* (40) Mar. 16.
 Water Transportation and Distribution Facilities.* Albert H. Scherzer. (41) Apr.
 Expert Commission's Plans for Increasing the Flow through the Chicago Drainage Canal. (13) Apr. 4.
 The Southern Pacific Wharf at Oakland, Cal.* (40) Apr. 5.

* Illustrated.

NEW BOOKS OF THE MONTH.

Unless otherwise specified, books in this list have been donated to the Library by the Publisher.

PURIFICATION OF THE WASHINGTON WATER SUPPLY.

An Inquiry held by Direction of the United States Senate Committee on the District of Columbia. Edited and Compiled by Charles Moore, Clerk of the Senate Committee on the District of Columbia. Cloth, 9 x 6 ins., 241 pp. Washington, Government Printing Office, 1901.

The Contents are: Report of Rudolph Hering, George W. Fuller, and Allen Hazen; Statements made at a Hearing held at the Waldorf-Astoria Hotel, New York City, Jan. 4th, 1901, Dr. J. S. Billings, Prof. William P. Mason, Allen Hazen, George W. Fuller, Edmund B. Weston, John W. Hill, Rudolph Hering, John M. Diven, and George A. Johnson; Filtration of Public Water Supplies, Lieut.-Col. Charles Smart; Filtration of Public Water Supplies, H. D. Geddings; Letter from Mr. Robert Spurr Weston in regard to the Report of the District of Columbia Medical Society; Extract from the Report of the Committee on Public Health of the Washington Board of Health; Historical Review of the Sanitary Efforts to Lessen Typhoid Fever in the District of Columbia; Report of the Investigation on the Feasibility and Propriety of Filtering the Water Supply of the City of Washington; Report made by a Special Committee of the Medical Society of the District of Columbia upon the Relative Merits of the Slow Sand and Mechanical Filtration; A Discussion of the Filtration of Water for Public Use by the American Society of Civil Engineers, at the London Meeting, 1900; Daily Mean Temperatures in the District of Columbia.

LES CHEMINS DE FER AUX COLONIES

Et dans les Pays Neufs: Fascicule Concernant les Chemins de Fer et les Tramways à Vapeur aux Indes Orientales Néerlandaises, Rédigé par M. J. W. Post. Ancien Ingénieur de 1^{re} Classe des Chemins de Fer de l'État aux Indes Orientales Néerlandaises, Membre Associé de l'Institut Colonial International. Boards, 9 x 5 ins., 263 pp., illus. Bruxelles, 1900. (Donated by the Author.)

The Contents are: Chemins de Fer de l'État Néerlandais à Java; Chemins de Fer de l'État Néerlandais à Sumatra; Aperçu des Tramways à Vapeur aux Indes Orientales Néerlandaises; Annexes de l' "Aperçu": I. Tableau des Tramways à Vapeur en Exploitation. II. Type de Conditions de Concession. III. Type de Conditions de Concession pour Embranchements. IV. Résumé des Règlements Concernant les Demandes de Concession, la Construction et l'Exploitation. V. Type d'Acte de Fondation de Société. VI. Résumé du Règlement Concernant les Tramways Privés pour l'Agriculture, l'Industrie, etc. Tramway à Vapeur Samarang-Joana. Tramway à Vapeur Java-Est; Tramway à Vapeur de la Séraïjou; Tramway à Vapeur Samarang-Chérignon.

EXPERIMENTAL ENGINEERING,

Vol. II. A Treatise on the Methods and Machines Used in the Mechanical Testing of Materials of Construction. By William Charles Popplewell, Assoc. M. Inst. C. E. Cloth, 9 x 6 ins., 404 pp., illus. The Scientific Publishing Company, Manchester, 1901. 10s. 6d. net.

The headings of chapters are: The Mechanics of Bodies under Test Loads; Testing Machines; Auxiliary Measuring Appliances; Testing Operations—Tension Tests; Testing Operations—Shearing and Bending Tests; Testing Operations—Torsion Tests; Automatic and Semi-Automatic Recording Apparatus; The Testing of Struts or Pillars; General Phenomena Exhibited by Test Pieces under Varying Conditions; Experiments on the Relation of Stress and Permanent Strain, and Repeated Stresses; The Testing of Vitreous Materials and of Timber; Strength Properties of the Principal Materials of Construction. There is a Bibliography of General References to the Subject of Testing, and an Index of four pages.

It was moved by C. W. Buchholz and seconded by H. G. Prout that the proposition of Mr. Webster, that a special committee on Standard Rail Sections be appointed, be referred to the Board of Direction, under Art. VI, Sec. 12, of the Constitution.

The motion was carried.

The Secretary presented communications on "The Shrinkage or Compressibility of Earth in Embankments," by Alexander E. Kastl, M. Am. Soc. C. E., and L. E. Lion, Assoc. M. Am. Soc. C. E. The subject was discussed by Messrs. R. S. Buck, Foster Crowell, G. W. Tillson, A. C. Gildersleeve, R. A. MacGregor, J. H. Stitzer, Jr., D. Ulrich, S. C. Thompson and W. R. Hutton.

Ballots were canvassed, and the following candidates were declared elected:

AS MEMBERS.

DANIEL CHARLES NEWMAN COLLINS, New York City.
JOHN H EMIGH, North Adams, Mass.
WALTER HAMAR GAHAGAN, Brooklyn, N. Y.
BERNARD LINCOLN GREEN, Cleveland, Ohio.
WILLIAM OSWALD HENDERER, Cleveland, Ohio.
GULIAN SCHMALZ HOOK, Schenectady, N. Y.
WILLIAM BROUARD MACKENZIE, Moncton, N. B., Canada.
MASON DELANO PRATT, Steelton, Pa.
GEORGE ALFRED RICKER, Buffalo, N. Y.
PERCIVAL MOSLEY SAX, Philadelphia, Pa.
RICHARD HOADLEY TINGLEY, Providence, R. I.

AS ASSOCIATE MEMBERS.

JOHN HERBERT GREGORY, Philadelphia, Pa.
JOHN HUNTER HANNA, Washington, D. C.
VAN DUSEN HITE-SMITH, Knoxville, Tenn.
FREDERICK WILLIAM HONENS, Sterling, Ill.
ALBERT LLOYD HOPKINS, Newport News, Va.
WILLIAM EDWARD JOHNSON, West Hartford, Conn.
REGINALD HORTON KEAYS, Havana, Cuba.
FRANÇOIS EMILE MATTHES, Mayer, Ariz.
RICHARD LORD RUSSELL, Brooklyn, N. Y.
RICHARD DANA UPHAM, New York City.
JOSEPH MILTON WALKER, Newcastle, Pa.
LEONARD CHASE WASON, Brookline, Mass.

The Secretary announced the election of the following candidates by the Board of Direction, on April 2d, 1901:

AS ASSOCIATE.

JOHN WINTHROP AUCHINCLOSS, New York City.

AS JUNIORS.

HENRY ROGERS CODWISE, Brooklyn, N. Y.

GEORGE SHERMAN FROST, New York City.

MYRON HENRY LEWIS, Croton-on-Hudson, N. Y.

JOHN LARVY MANN, Hanover, N. H.

PHILIP WALLIS PRICE, Oakmount, Pa.

MOSES EDMUND SHIRE, Chicago, Ill.

JOSEPH GRUNDY SHRYOCK, Philadelphia, Pa.

ROBERT ALEXANDER WIDDICOMBE, Chicago, Ill.

The Secretary announced the death of NELSON OLIVER WHITNEY; elected Member March 1st, 1893; died March 18th, 1901.

Adjourned.

April 17th, 1901.—The meeting was called to order at 8.40 P. M., President J. James R. Croes in the chair; Charles Warren Hunt, Secretary; and present, also, 115 members and 34 guests.

James C. Meem, Assoc. M. Am. Soc. C. E., Assistant Engineer Rapid Transit Railroad Commission, described and illustrated with lantern slides the Canal Street sewer system and the method of constructing a 6-ft. 6-in. sewer in tunnel through sand.

The subject was discussed by Messrs. C. H. Myers, Francis Collingwood, H. W. Brinckerhoff, F. S. Skinner, J. Waldo Smith, T. H. McCann and R. D. Bethel.

Adjourned.

OF THE BOARD OF DIRECTION.

(Abstract.)

April 2d, 1901.—8.20 P. M.—President Croes in the Chair; Charles Warren Hunt, Secretary, and present, also, Messrs. Bensel, Briggs, Endicott, Knap, O'Rourke, Osborn, Seaman and Turner.

The Secretary reported the following additions to the Committee "On the Proper Manipulation of Tests of Cement": S. B. Newberry, Clifford Richardson, Richard L. Humphrey, F. H. Lewis, and the resignation as a member of that Committee of Mr. H. W. York.

Applications were considered and other routine business transacted. One candidate for Associate and eight for Junior were elected.

Adjourned.

ANNOUNCEMENTS.

The House of the Society is open from 9 A. M. to 10 P. M. every day, except Sundays, Fourth of July, Thanksgiving Day and Christmas Day.

MEETINGS.

Wednesday, May 1st, 1901.—8.30 P. M.—A business meeting will be held, at which ballots for membership will be canvassed, and a paper by Abel E. Blackmar, Esq., entitled, "Railroad Discrimination against New York, and the Remedy," will be presented for discussion.

This paper is printed in this number of *Proceedings*.

Wednesday, May 17th, 1901.—8.30 P. M.—At this meeting a paper by William W. Harts, M. Am. Soc. C. E., entitled, "Description of Coos Bay, Ore., and the Improvement of its Entrance by the Government," will be presented for discussion.

This paper is printed in this number of *Proceedings*.

Wednesday, June 5th, 1901.—8.30 P. M.—A business meeting will be held, at which ballots for membership will be canvassed, and a paper by Morris Knowles, Assoc. M. Am. Soc. C. E., and Mr. Charles G. Hyde, entitled, "The Lawrence, Mass., City Filter: A History of its Installation and Maintenance," will be presented for discussion.

This paper is printed in this number of *Proceedings*.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST.

(March 14th to April 10th, 1901.)

NOTE.—This list is published for the purpose of placing before the members of the Society the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS.

In the subjoined list of articles references are given by the number prefixed to each journal in this list.

- (1) *Journal, Assoc. Eng. Soc.*, 257 South Fourth St., Philadelphia, Pa., 30c.
- (2) *Proceedings, Eng. Club of Phila.*, 1122 Girard St., Philadelphia, Pa.
- (3) *Journal, Franklin Inst.*, Philadelphia, Pa., 50c.
- (4) *Journal, Western Soc. of Eng.*, Monadnock Block, Chicago, Ill.
- (5) *Transactions, Can. Soc. C. E.*, Montreal, Que., Can.
- (6) *School of Mines Quarterly*, Columbia Univ., New York City, 50c.
- (7) *Technology Quarterly*, Mass. Inst. Tech., Boston, Mass., 75c.
- (8) *Stevens Institute Indicator*, Stevens Institute, Hoboken, N. J., 50c.
- (9) *Engineering Magazine*, New York City, 30c.
- (10) *Cassier's Magazine*, New York City, 25c.
- (11) *Engineering* (London), W. H. Wiley, New York City, 35c.
- (12) *The Engineer* (London), International News Co., New York City, 35c.
- (13) *Engineering News*, New York City, 15c.
- (14) *The Engineering Record*, New York City, 12c.
- (15) *Railroad Gazette*, New York City, 10c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Street Railway Journal*, New York City, 35c.
- (18) *Railway and Engineering Review*, Chicago, Ill.
- (19) *Scientific American Supplement*, New York City, 10c.
- (20) *Iron Age*, New York City, 10c.
- (21) *Railway Engineer*, London, England.
- (22) *Iron and Coal Trades Review*, London, England.
- (23) *Bulletin, American Iron and Steel Assoc.*, Philadelphia, Pa.
- (24) *American Gaslight Journal*, New York City, 10c.
- (25) *American Engineer*, New York City, 20c.
- (26) *Electrical Review*, London, England.
- (27) *Electrical World and Electrical Engineer*, New York City, 10c.
- (28) *Journal, New England Water-Works Assoc.*, Boston, 75c.
- (29) *Journal, Society of Arts*, London, England.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium.
- (31) *Annales de l'Assoc. des Ing. Sortis des École Spéciales de Gand*, Brussels, Belgium.
- (32) *Mémoires et Compte Rendu des Travaux*, Soc. Ing. Civ. de France, Paris, France.
- (33) *Le Génie Civil*, Paris, France.
- (34) *Portefeuille Économique des Machines*, Paris, France.
- (35) *Nouvelles Annales de la Construction*, Paris, France.
- (36) *La Revue Technique*, Paris, France.
- (37) *Revue de Mécanique*, Paris, France.
- (38) *Revue Générale des Chemins de Fer et des Tramways*, Paris, France.
- (39) *Railway Master Mechanic*, Chicago, Ill.
- (40) *Railway Age*, Chicago, Ill., 10c.
- (41) *Modern Machinery*, Chicago, Ill., 10c.
- (42) *Transactions, Am. Inst. Elec. Eng.*, New York City, 50c.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (44) *Journal, Military Service Institution*, Governor's Island, New York Harbor, 75c.
- (45) *Mines and Minerals*, Scranton, Pa., 20c.
- (46) *Scientific American*, New York City, 10c.
- (47) *Mechanical Engineer*, Manchester, England.
- (48) *Proceedings, Eng. Soc. W. Pa.*, 410 Penn Ave., Pittsburg, Pa., 50c.
- (49) *Transactions, Mining Institute of Scotland*, London and Newcastle-upon-Tyne.
- (50) *Municipal Engineering*, Indianapolis, Ind., 25c.
- (51) *Proceedings, Western Railway Club*, 225 Dearborn St., Chicago, Ill., 35c.
- (52) *American Manufacturer and Iron World*, 59 Ninth St., Pittsburg, Pa.
- (53) *Minutes of Proceedings, Inst. C. E.*, London, England.
- (54) *Power*, New York City, 10c.

LIST OF ARTICLES.

Bridge.

- Economy and Strength of Brick and Concrete Arches for Floor Systems of Highway Bridges.* William D. Bullock. (1) Feb.
 Reconstruction of the Missouri River Bridge at Glasgow, Mo.; Chicago & Alton Ry.* W. D. Taylor, M. Am. Soc. C. E. (13) Mar. 14. (14) Mar. 16.
 Two Drawbridges on the New York Central Railroad.* (15) Mar. 15.
 Bridges and Trestles.* (40) Mar. 15. (18) Mar. 16.
 Working Over Old Bridge Iron.* John H. Pope. (40) Mar. 15.
 The Utility of the Bascule Bridge.* (40) Mar. 15.
 The X Bridge at Mans, France. (14) Mar. 23.
 The Switchback Arch Bridge of the White Pass & Yukon Railway.* (14) Mar. 23.
 Erection of Upper Parts of Towers of New East River Bridge, New York.* (14) Mar. 30.
 European and American Bridge-Building Practice. Thomas Curtis Clarke. (9) Apr.

Electrical.

- Efficiencies of Small Electric Lighting Plants. A. W. Richter and B. V. Swenson. (4) Dec.
 The Robert A. Waller Municipal Lighting Plant. Edward B. Ellicott. (4) Dec.
 Important European Electrical and Engineering Developments at the Close of the Nineteenth Century.* William J. Hammer. (42) Feb.
 A Method of Compensating Voltmeters for the Voltage Drop in Long Feeders.* Michael B. Field. (26) Serial beginning Mar. 1, ending Mar. 15.
 The Economical Current Density for Small Conductors. James Whitcher. (26) Serial beginning Mar. 1, ending Mar. 8.
 100-Ton Electric Ladle Crane.* (11) Mar. 8.
 Electric Shock Accidents: Their Prevention and Remedy. (26) Mar. 8.
 High Tension Cables. E. Kilburn Scott. (26) Mar. 8.
 On the Use of Storage Batteries in Connection with Electric Tramways. G. A. Grindley, M. I. E. E. (26) Serial beginning Mar. 8, ending Mar. 15.
 Up-to-date Transformer Design.* (26) Mar. 8.
 Multiplex Wireless Telegraphy with Tuned Apparatus. (26) Serial beginning Mar. 15, ending Mar. 22.
 The Ganz Three-Phase Railway System.* (27) Mar. 16.
 The Long Distance Telegraph and Telephone Systems of Pupin, Thompson and Reed. E. F. Roerber. (27) Serial beginning Mar. 16, ending Mar. 30.
 Electrical Transmission Direct from the Coal Mine: A German Coal Mine Plant at Essen-Ruhr. Frank C. Perkins. (20) Mar. 21.
 Polyphase Substation Machinery.* A. C. Eborall. (11) Serial beginning Mar. 22, ending Mar. 29.
 Combined Trolley and Conduit Tramway Systems. A. N. Connett. (26) Serial beginning Mar. 22, ending Mar. 29.
 Extensions to the Power System of the North Jersey Steel Railway System.* (17) Mar. 23.
 Automatic Changeable Electric Signs.* (19) Mar. 23.
 The Hoboken Power Plant of the United Electric Company of New Jersey.* (27) Mar. 23.
 The Invention of the Telephone. George S. Davis. (27) Mar. 23.
 The Burry Page-Printing Telegraph.* (46) Mar. 23.
 Electric Traction and the Liability for Electrolysis. (12) Mar. 29.
 Proposed High-Speed Electrical "Monorail" between Liverpool and Manchester. F. B. Behr. (26) Mar. 29.
 A Comparison of the Different Methods of Motor Control. (17) Mar. 30.
 Power Transmission in Utah.* J. R. Cravath. (27) Mar. 30.
 Transatlantic Communication by Means of the Telephone. Prof. M. I. Pupin. (9) Apr.
 The Electric Motor for Speed Regulation. Dr. Schuyler S. Wheeler. (10) Apr.
 Electric Vehicles vs. Tram Cars: A Possible Development of the Future. Alton D. Adams. (10) Apr.
 The Power Station of the Manhattan Elevated Railway.* (64) Apr.
 Electric Power at the Comstock Lode.* (45) Apr.
 Rathmines Municipal Electrical Plant.* Frank C. Perkins. (60) Apr.
 The Generation and Distribution of Power in the Olympia Mills.* (14) Apr. 6.
 The Service Capacity of Railway Motors. A. H. Armstrong. (17) Apr. 6.
 The Development of Telpherage.* (27) Apr. 6.
 Electric Power for Irrigation Pumping at Bakersfield, California.* (27) Apr. 6.
 Storage Battery Maintenance. Thos. J. Fay. (27) Apr. 6.
 Groupe Electrogène de 2 200 Chevaux des Sociétés d'Augsbourg et Nuremberg Réunies et de la Société d'Electricité Schuckert.* Georges Henry. (33) Mar. 16.

Marine.

- The Powering of Ships.* William Ledyard Cathcart. (6) Jan.
 The Hamburg-American Liner *Deutschland*. (11) Serial beginning Mar. 8, ending Mar. 22.
 Atlantic Steamships: Present and Future.* (47) Mar. 9.
 New American Steel Shipbuilding Plants. Waldon Fawcett. (20) Mar. 14.

* Illustrated.

Electrical—(Continued).

- Some Notes on the History and Development of the Multiple-Unit System of Train Operation. George H. Hill. (17) May 4.
 Le Résonateur Oudin Bipolaire: La Télégraphie sans Fils.* O. Rochefort. (32) Feb.
 Essais de Traction par Courants Triphasés à Haute Tension.* René Philippe. (33) Mar. 30.
 Exposition de 1900: Groupe Electrogène de 825 Kilowatts, Carels Frères et Kolben et Cie.* Ch. Dantin. (33) Mar. 30.
 Extraction du Fer au Four Électrique, par le Procédé Strassano.* L. Gautier. (34) Apr.
 Traction Électrique Indépendante de l'Adhérence.* (33) Apr. 6.

Marine.

- Taylor's Analysis Applied to a Screw Ferryboat. E. A. Stevens and Charles P. Paulding. (8) Apr.
 The Motion of Submarine Boats in the Vertical Plane. Capt. William Hovgaard. (11) Serial beginning Apr. 5, ending Apr. 12.
 The White Star Liner *Celtic*. (11) Apr. 12. (12) Apr. 12.
 Fifteen Years' Development of the 90-Foot Racing Yacht.* (46) Apr. 18.
 Launch of the Pacific Mail Liner *Korea*.* (46) Apr. 18.
 Ten Years' Naval Construction in the United States. Prof. J. H. Biles. (11) Serial beginning Apr. 19, ending Apr. 26.
 The Algiers Floating Dock.* (62) Apr. 25.
 A 10 000-Ton Balanced Sectional Dry-Dock.* Wm. T. Donnelly. (13) May 2.
 Launch of the White Star Liner *Celtic*.* (46) May 4.
 Turkish Submarine Boat of the Nordenfeldt Type.* (46) May 4.

Mechanical.

- The Construction of Foundry Patterns.* Herbert Aughtie. (47) Serial beginning Dec. 15, ending Apr. 6.
 Boilers at the Paris Exhibition. (12) Serial beginning Mar. 23, ending Mar. 29.
 Transport by Wire Ropeways.* (47) Serial beginning Mar. 30, ending Apr. 6.
 Chains and Chain Gearing.* Charles Piez. (2) Apr.
 Experiments on a Niclausse Water-Tube Boiler. (12) Apr. 5.
 On a Form of Double-Tube Boiler.* John Irving. (12) Apr. 5.
 On a New Assistant Cylinder. David Joy. (12) Apr. 5.
 The Diesel Oil Engine.* (26) Apr. 5.
 The Steelworks, Wireworks, and Sheet Mills of Dorman, Long and Co., Middlesborough.* (22) Apr. 5.
 The Strength and Ductility of Bronze in Relation to Temperature. C. Bach. (12) Apr. 5.
 On the Balancing of the Reciprocating Parts of Engines, Including the Effect of the Connecting-Rod. Prof. W. E. Dalby. (11) Serial beginning Apr. 5, ending Apr. 19.
 Machine Shop Practice. D. B. Dixon. (62) Apr. 11.
 On the Form of a Double-Tube Boiler.* John Irving. (11) Apr. 12.
 Steel Ball Bearings.* (11) Apr. 12.
 The Incandescent System of Gas Lighting. (12) Apr. 12.
 A New Assistant Cylinder.* David Joy. (47) Apr. 13.
 Pneumatic Tools and Appliances in Foundry Service. W. P. Pressinger. (47) Apr. 18.
 The Steam Consumption of Different Size Engines of the Same Type. (47) Apr. 18.
 500-H. P. Premier Gas Engine. (47) Apr. 18.
 The Termination of the Trials of Count von Zeppelin's Airship. H. W. L. Moedebeck. (19) Apr. 18.
 Paris Automobile and Cycle Show.* (19) Apr. 18.
 Water-Tube Boilers in Marine Practice. Edwin Griffith. (47) Serial beginning Apr. 18, ending Apr. 20.
 The Making of a Sub-Press Die.* A. F. Horton. (62) Apr. 18.
 The Burdick Automatic Bolt and Nut Machines.* (20) Apr. 18.
 A Notable Crane Equipment.* (20) Apr. 18.
 Steam Boiler Efficiency. William Kent. (15) Apr. 19.
 Griston Gearing.* (19) Apr. 20.
 Thornycroft-Marshall Water-Tube Boiler.* (47) Apr. 20.
 The Bartlett-Kent Process for Rolling Seamless Pipe.* (20) Apr. 25.
 Some Recent Tests of the Diesel Oil Engine. Bryan Donkin. (12) Apr. 26.
 Cooling Towers and the Removal of Oil from Exhaust Steam. (14) Apr. 27.
 On a Form of Double-Tube Boiler.* John Irving. (47) Apr. 27.
 The Proportions of Cylinders for Multiple-Expansion Engines. Alfred Hanssen, Assoc. M. Inst. C. E. (47) Apr. 27.
 The Quantitative Estimation of Hydrogen Sulphide in Illuminating Gas. C. C. Tutwiler. (24) Apr. 29.
 A Rope Transmission Plant at Buffalo, N. Y.* (64) May.
 How Should Boiler-Heating Surfaces Be Calculated? (41) May.
 Portable Pneumatic Tools.* (41) May.
 Hydraulic Shop Tools.* (25) May.
 Steam Boilers at the Paris Exhibition; Some Continental Types.* W. D. Wansbrough. (10) May.

*Illustrated.

Mechanical—(Continued).

- Liquid Fuel; Some Conclusions from Recent Trials. E. L. Orde. (10) May.
 The Mechanical Engineering of Machine Tools. Charles L. Griffin. (9) May.
 The Steam Motor Truck as a Portable Power House. James Grieve Dudley. (9) May.
 Two Natural Gas Pumping Stations.* A. S. Moon. (64) May.
 The Boiler and the Boiler Room. W. J. Ranton. (64) May.
 Superheated Steam. (64) May.
 A New Form of Rotary Concrete Mixer.* (13) May 2.
 A Double Cableway for the New York Rapid Transit Railway Work.* (13) May 2.
 A Valve with Double Revolving Gate Disks.* (13) May 2.
 Lecture to Columbia Students on the Gas Engine. Wm. P. Flint. (62) May 2.
 A 1 000 Horse-Power Gas Engine and Compressor. E. E. Eysenbach. (14) May 4.
 The Mechanical Plant of a Baltimore Office Building.* (14) May 4.
 Les Automobiles: I, La Voiture Automobile de Course à la Fin de 1900, par M. G. de Chasseloup-Laubat; II, Compte Rendu des Concours de Motocycles, Voiturettes et Voitures de Tourisme, par M. G. Forestier; III, Compte Rendu des Concours d'Automobilisme Industriel, par M. G. Forestier. (32) Feb.
 Entretoises de Foyer en Bronze Manganésé. M. Rodrigue. (38) Mar.
 Système de Nettoyage Instantané et sans Arrêt de Leur Chaudière à Vapeur. L. Solignac and A. Grille. (32) Mar.
 Chaudière Marine de MM. Solignac et Grille.* J. Prouteau. (36) Mar. 25.
 La Navigation Aérienne.* Émile Dieudonné. (36) Mar. 25.
 Machine à Raboter Universelle.* (34) Apr.
 Moteur à Pétrole, de Trois Chevaux.* (34) Apr.
 Examen de la Toile d'Amiante pour la Garniture des Pistons dans les Machines à Vapeur. H. Pautier. (36) Apr. 10.

Metallurgical.

- The Latest Belgian Blast Furnace. (16) Apr. 13.
 Metallic Alloys. J. E. Stead. (47) Serial beginning Apr. 13, ending Apr. 27.
 Electric Furnace for Smelting Iron. (22) Apr. 19.
 Gold Milling Practice at the Athabasca Mine, Nelson, B. C. E. Nelson Fell. (16) Apr. 20.
 Chemical Analysis as an Aid to Foundry Work. Robert Buchanan. (11) Apr. 26.
 The History of Copper Smelting in the Lake Superior Region. James B. Cooper. (16) Apr. 27.
 Modern Cupola Practice.* Dr. R. Moldenke. (10) May.
 Modern Smelting Equipment.* (41) May.
 The Bertrand-Thiel Process. John W. Cabot. (20) May 2.
 Notes sur Quelques Modifications Apportées dans ces Dernières Années au Four Martin. Ch. Clausel de Coussergues. (32) Mar.
 Agglomération des Minerais Pulvérulents.* A. Lapouche. (33) Apr. 13.

Military.

- The Influence of Submarine Cables upon Military and Naval Supremacy. George O. Squier. (10) Apr. 20.
 Modern British Ordnance.* Waldon Fawcett. (46) Apr. 20.
 Boer Field Artillery.* (12) Apr. 26.
 Essais Officiels de Réception des Aciers à Canon en France et aux États-Unis. M. S. Heryngfet. (32) Feb.
 Emploi des Locomotives Routières et des Trains Blindés en Campagne.* G. Espitalier. (33) Apr. 13.
 Les Blindages à l'Exposition de 1900. L. Baclé. (33) Serial beginning Apr. 13, ending Apr. 20.

Mining.

- Miners' Electrical Safety Lamps. Sydney F. Walker. (22) Serial beginning Mar. 29, ending Apr. 5.
 The Prevention of Accidents in Coal Mines Caused by Falls of Roof and Sides. (22) Apr. 12.
 Sinking No. 5 Shaft at the Tamarack Mine, Michigan.* William E. Parnall, Jr. (16) Apr. 13.
 Coal Mining under Sydney Harbor. J. L. C. Rae. (22) Apr. 19.
 Employment of Metal Bars in Coal Mining. (22) Apr. 19.
 The Kellogg Tunnel; Bunker Hill & Sullivan Mines, Idaho. Ulysses B. Hough. (13) Apr. 25.
 Modern Colliery Surface Equipment.* (22) Apr. 26.
 The Coal-Field of Somerset County, Pa. W. G. Irwin. (16) Apr. 27.
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 Brushy Mountain Coal Mines.* A. W. Evans. (45) May.
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Miscellaneous.

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Municipal.

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Railroad.

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Waterways.

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 Note sur la Décomposition des Ciments de Portland dans l'Eau de Mer. Baron Quinette de Rochemont. (43) 4^e trimestre, 1900.

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PUBLIC WATER SUPPLIES.

Requirements, Resources and the Construction of Works. By F. E. Turneaure and H. L. Russell. With a Chapter on Pumping Machinery by D. W. Mead. M. Am. Soc. C. E. Cloth; 9 x 6 ins., 746 pp., illus. New York, John Wiley & Sons, 1901. \$5.00. (Donated by the Authors.)

The preface states that this volume has been prepared with particular reference to the needs of teachers and students in technical schools in which the subject of water supply receives a considerable amount of attention. In the discussion of the various subjects treated, the endeavor has been to lay stress upon fundamental principles rather than upon details of practice, although methods of construction have been freely given where they might serve to illustrate the principles involved or bring out the effects of differences in conditions. References to authorities are numerous, and the plan has been adopted of giving, at the end of each chapter, a brief list of the best literature of the subject treated. The Contents are: Part I. Requirements and Resources—A. Quantity of Water Required, Sources of Supply; B. Quality of Water-supplies. Part II. The Construction of Water-Works—A. Works for the Collection of Water; B. Works for the Purification of Water; C. Works for the Distribution of Water.

WATER-WORKS DISTRIBUTION.

A Practical Guide to the Laying Out of Systems of Distributing Mains for the Supply of Water to Cities and Towns. By J. A. McPherson, A. M. Inst. C. E. Cloth, 8 x 5 ins., 14 + 154 pp., 19 pl., map, illus. New York, D. Van Nostrand Company, 1901. \$2.50.

The author has intended this work to be of service to those in the actual practice of laying out systems of water-works distribution as well as to students. The Contents are: Introductory Remarks upon the Sources of Supply and Storage of Water; General Arrangement of Supply to District of Distribution; Notes upon System of Distribution; Details of Method of Laying Out Distributing Mains; Pipes and Fittings upon Distributing System; Meters and Measurement of Water, and Regulating and Recording Apparatus. There is an index of six pages, and a large chart of an example district showing distribution.

TOWERS AND TANKS FOR WATER-WORKS.

The Theory and Practice of their Design and Construction. By J. N. Hazlehurst, M. Am. Soc. C. E. Cloth, 9 x 6 ins., 9 + 216 pp., illus. New York, John Wiley & Sons, 1901. \$2.50. (Donated by the Author.)

The author states in the introduction that, in the treatment of this subject, it is intended to avoid as much as possible elaborate calculations and deductions based upon problematrical theories and conditions, and to present such facts as may have been verified, freed, as nearly as may be possible, from the tons of mathematical rubbish which frequently bury the simplest truths. The Contents are: Historical, Explanatory and Statistical; The Chemical and Physical Properties of Structural Metals; Comparison of Structural Materials; Stability of Structure; Mechanical Principles; Riveting; Designing; Foundations; Painting; Shop-Practice and Erection. There is an index of six pages.

TUNNELING.

A Practical Treatise. By Charles Prelini, with additions by Charles S. Hill. Cloth, 9 x 6 ins., 15 + 311 pp., illus. New York, D. Van Nostrand Company, 1901. \$3.00.

The general purpose of this book is to explain all the operations that are required in tunneling, and then illustrate by suitable examples the actual application of these methods in practice. Formulas and difficult calculations have been avoided, the book being simply descriptive, and the text illustrated, so that it can be easily understood by students and others unfamiliar with tunneling work. The headings of chapters are: Preliminary Considerations, Choice between a Tunnel and an Open Cut, Method and Purpose of Geological Surveys; Methods of Determining the Center Line and Forms and Dimensions of Cross-Section; Excavating Machines and Rock Drills, Explosives and Blasting; General Methods of Excavation, Shafts, Classification of Tunnels; Methods of Timbering or Strutting Tunnels; Methods of Hauling in Tunnels; Types of Centers and Molds Employed in Constructing Tunnel Linings of Masonry; Methods of Lining Tunnels; Tunnels through Hard Rock; Representative Mechanical Installations for Tunnel Work; Excavating Tunnels through Soft Ground; The Full-Section Method of Tunneling; Special Treacherous Ground Method; Open-Cut Tunneling Methods; Submarine Tunneling; Accidents and Repairs in Tunnels during and after Construction; Relining Timber-Lined Tunnels with Masonry; The Ventilation and Lighting of Tunnels during Construction; The Cost of Tunnel Excavation, and the Time Required for the Work. There is an index of three pages.

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IVES, EDWARD BERNARD.	Care, Chf. Signal Officer, Div. of the Philippines, Manila, Philippine Islands.

KELLER, CHARLES.....	Capt., Corps of Engs., U. S. A., U. S., Engrs. Office, Grand Rapids, Mich.
LUCAS, DANIEL JONES.....	Dept. of Public Works, Bureau of Water, Asst. Eng., Impvt. Extension and Filtration of the Water Supply, 710 City Hall, Philadelphia, Pa.
LUDLOW, WILLIAM.....	Brig. Genl., U. S. A., Convent Station, N. J.
MACNAUGHTON, JAMES.....	Pres., MacIntyre Iron Co., Tahawus, Essex Co., N. Y.
MORISON, GEORGE SHATTUCK.....	49 Wall St., Room 1713, New York City.
OLCOTT, EBEN ERSKINE.....	Gallatin Bank Bldg., 36 Wall St., New York City.
PURDON, CHARLES DE LA CHEROIS.....	Chf. Eng., St. L. & S. F. Ry., Century Bldg., St. Louis, Mo.
QUINTERS, JOHN CHARLES.....	U. S. Engrs. Office, 540 Federal Bldg., Buffalo, N. Y.
STUART, ALFRED ALLEN.....	Sillery, Que., Canada.
THATCHER, EDWIN.....	Park Row Bldg., Room 1228, New York City.
VIELÉ, MAURICE AUGUSTUS.....	Schenectady, N. Y.
WILLIAMSON, FRANCIS STUART.....	Cons. Structural Eng., 25 Broad St., New York City.

ASSOCIATE MEMBERS.

BASINGER, JAMES GARNETT.....	243 West 131st St., New York City.
BRYSON, THOMAS BINES.....	52 West 21st St., New York City.
BAUSHER, CARMI IRVING.....	136 North 13th St., Harrisburg, Pa.
CARLILE, THOMAS JENES.....	Div. Eng., Cornwall & Western R. R., Lebanon, Pa.
CARTER, WILLIAM J.....	City Eng., Cleveland, Ohio; 2042 Woodland Hills Ave., Cleveland, Ohio.
HOYT, JOHN T. NOYE.....	349 Madison Ave., New York City.
HUESTIS, CHARLES CALVIN.....	P. O. Box 284, Clearfield, Pa.
HUSTON, TILLINGHAST L'HOMMEDIEU.....	Mgr. for Cuba for James B. Clow & Sons, 36 Obispo St., Havana, Cuba.
LLEWELLYN, FREDERICK THOMAS.....	Koken Bldg., 9th Floor, St. Louis, Mo.
MACGREGOR, ROBERT ATHOLE.....	788 East 182d St., New York City.
REICHMANN, ALBERT FERDINAND.....	1000 Isabella Bldg., 46 East Van Buren St., Chicago, Ill.
SELTZER, HARRY KENT.....	Care, Waddell & Hedrick, 660-664 Gi- braltar Bldg., Kansas City, Mo.
SHOEMAKER, LOUIS HENRY.....	1718 Beverly Road, Brooklyn, N. Y.
STRONG, WILLIAM EDWARD SCHENCK.....	513 Union Trust Bldg., Detroit, Mich.
WORTENDYKE, NICHOLAS DOREMUS.....	108 Bentley Ave., Jersey City, N. J.

ASSOCIATES.

JOHNSTON, JOHN PARRY.....	Care Alphonse Custodis Co., Marquette Bldg., Chicago, Ill.
YOUNG, CHARLES GRIFFITH.....	Care, J. G. White & Co., 29 Broadway, New York City.

JUNIORS.

CONNICK, HARRIS DE HAVEN.....	Asst. Eng., Board of Public Works, City Hall, San Francisco, Cal.
HIGHLEY, LEE.....	Bridges and Buildings Dept., Mo. Pac. Ry., Poplar Bluff, Mo.
HOLLINGSWORTH, CREIGHTON HAMILTON.....	Care, Stone & Webster, 93 Federal St., Boston, Mass.
STEFFENS, WILLIAM FREDERICK.....	Eng. in Chg., Elev. of Grade Crossings, Erie R. R., 5 Linden Ave., Middletown, N. Y.
STEVENS, PERLEY EGBERT.....	202 Eleventh St., S. W., Washington, D. C.
STOUDER, JOHN BURTON.....	Road-master, 3d Sub-Div., C. & N. W. Ry., Mason City, Iowa.
TILT, GARRET EDWARD.....	698 East 24th St., Paterson, N. J.
TRACY, LOUIS DOWNER.....	Chf. Engr.'s Office, P. & L. E. R. R., Pittsburg, Pa.
TYRRELL, WARREN AYRES.....	Care, Christopher & Simpson, Arch. Iron & Foundry Co., 9th and Park Ave., St. Louis, Mo.
VAN BRAKLE, JOHN OGDEN.....	1913 Franklin Ave., Tremont, New York City.

DEATHS.

RICHARD PENNEFATHER ROTHWELL.....	Elected Member Jan. 29th, 1868; died April 17th, 1901.
HENRY ST. LEGER COPPÉE.....	Elected Member Oct. 5th, 1887; died May 8th, 1901.
ALFRED PETRY.....	Elected Member Oct. 6th, 1886; died May 14th, 1901.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

INSTITUTED 1852.

PROCEEDINGS.

This Society is not responsible, as a body, for the facts and opinions advanced in any of its publications.

SOCIETY AFFAIRS.

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MINUTES OF MEETINGS.

OF THE SOCIETY.

June 5th, 1901.—The meeting was called to order at 8.35 p. m.; President J. James R. Croes in the chair; Charles Warren Hunt, Secretary; and present, also, 108 members and 28 visitors.

The minutes of the meetings of May 1st and 15th were approved as printed in *Proceedings* for May, 1901.

A paper by Morris Knowles, Assoc. M. Am. Soc. C. E., and Mr. Charles G. Hyde, entitled "The Lawrence, Mass., City Filter: A History of its Installation and Maintenance," was presented in abstract by Mr. Knowles, and illustrated with the stereopticon. The paper was discussed by Messrs. Allen Hazen, George I. Bailey, George W. Fuller, and George A. Soper. The Secretary presented communications on the subject from Messrs. Robert S. Weston and M. F. Collins.

Ballots were canvassed, and the following candidates were declared elected:

AS MEMBERS.

ORVILLE BENSON, Edison, N. J.
CHARLES HALL FITCH, Washington, D. C.
EDWARD AUGUSTUS WHITE HAMMATT, Boston, Mass.
EDWARD HAYES, Cohoes, N. Y.
JOHN WILLIS HAYS, Petersburg, Va.
CHARLES EZRA HEQUEMBOURG, Dunkirk, N. Y.
WALTER HOVEY HILL, New York City.
FRANKLIN DAVINPORT HOWELL, Jr., Massena, N. Y.
TORAGORO KONDO, Tokyo, Japan.
CHARLES ARTHUR MATCHAM, Allentown, Pa.
HARVEY COOPER MILLER, New York City.
BURDETT MOODY, Lead, S. Dak.
JAMES EDWIN ALEXANDER MOORE, Cleveland, Ohio.
EDMUND WINTER PAGET, Portland, Ore.
JAMES THOMAS PARDEE, Cleveland, Ohio.
PAUL LOUIS SCHULTZE, Utica, N. Y.

AS ASSOCIATE MEMBERS.

LOUIS JACOB AFFELDER, Allegheny, Pa.
PERCY CANFIELD BARNEY, Boston, Mass.
WILLIAM HAUCK, New York City.
ROBERT HOFFMANN, Cleveland, Ohio.
GLENN DICKINSON HOLMES, Philadelphia, Pa.
NED HERBERT JANVRIN, Pencoyd, Pa.
EUGENE LA MANNA, San Juan, Porto Rico.
PERRY ROBINSON McNEILLE, Orange, N. J.
CHARLES STERLING MILLARD, Hoboken, N. J.
JAY JOHNSON MORROW, Manila, Philippine Islands.
HARRY LINCOLN NOYES, Niagara Falls, N. Y.
WILLIAM MARCUS ROSEWATER, South Milwaukee, Wis.
ERNEST BURSLEM THOMSON, St. Augustine, Fla.

The Secretary announced the election of the following candidates by the Board of Direction on June 4th, 1901:

AS ASSOCIATE.

JOSEPH WILLIAM ZIPPERLEIN, Philadelphia, Pa.

AS JUNIORS.

CHARLES EDWARD FRASER, New York City.
JOHN COLIN GRAY, Brooklyn, N. Y.

CLARKE NIGHTINGALE KAST, Troy, N. Y.

ARCHIBALD ANGUS MACDONALD, Yonkers, N. Y.

ALEXANDER ORR, Gloversville, N. Y.

The Secretary announced the death of ANDREW LANGSTAFF JOHNSTON, elected Member June 4th, 1890; died May 15th, 1901.

Adjourned.

THIRTY-THIRD ANNUAL CONVENTION, HELD AT NIAGARA FALLS, N. Y., JUNE 25th, 26th, 27th AND 28th, 1901.

First Session, Tuesday, June 25th, 1901.—The meeting was called to order at 10.45 A. M.; President J. James R. Croes in the chair; Charles Warren Hunt, Secretary.

The President called upon George A. Ricker, M. Am. Soc. C. E., Chairman of the Committee of the Engineers' Society of Western New York for the Reception of Visiting Engineers. In a brief speech Mr. Ricker welcomed the Society to the Niagara Frontier, and outlined in a general way the prosperous condition of work in which engineers are interested in the vicinity of Buffalo and Niagara Falls.

President Croes delivered the Annual Address.

The Secretary announced the general programme for the Convention.

Major Thomas W. Symons invited any of those interested to visit the harbor works at Buffalo, and Mr. Walter McCulloh, on behalf of the Local Committee, described briefly the engineering work in progress at Niagara Falls.

The business meeting then convened.

Second Session, Tuesday, June 25th, 1901.—The meeting was called to order at 8.30 P. M., President Croes in the chair; Charles Warren Hunt, Secretary; many members and guests being present.

Walter McCulloh, M. Am. Soc. C. E., entertained the meeting with a description of the "Bridges of Niagara." The address was illustrated with lantern slides.

Adjourned.

Third Session, Wednesday, June 26th, 1901.—The meeting was called to order at 10.30 A. M.; President Croes in the chair; Charles Warren Hunt, Secretary.

Discussion on the following subjects was called for by the President:

"Do the interests of the profession, and the duty of its members to the public, require that only those who are competent be allowed to practice as Civil Engineers?"

"Under what authority, through what agency, and upon what evidence of competency, should applicants be admitted to the practice of Civil Engineering?"

The Secretary presented a discussion prepared by Samuel Whinery, M. Am. Soc. C. E., and the subject was discussed by the following:

FOSTER CROWELL, M. Am. Soc. C. E.
F. C. OSBORN, M. Am. Soc. C. E.
H. W. BRINCKERHOFF, M. Am. Soc. C. E.
FRANK A. HINDS, M. Am. Soc. C. E.
W. R. HUTTON, M. Am. Soc. C. E.
J. F. WALLACE, M. Am. Soc. C. E.
DESMOND FITZGERALD, M. Am. Soc. C. E.
CLEMENS HERSCHEL, M. Am. Soc. C. E.
EDWARD A. BOND, M. Am. Soc. C. E.
J. P. A. MAIGNEN, Assoc. Am. Soc. C. E.

It was moved, seconded, and carried, that the matter be referred to a committee of five, to be appointed by the chair, and to report to the next Annual Convention.

The meeting then took up the discussion of the second topic, as follows:

“Steel-Concrete Construction:

“What stress in tension and compression should be allowed in concrete?”

“What is the proper modulus of elasticity of concrete?”

“In Steel-concrete arches:

“(1.)—What should be the ratio of steel section to concrete section, and what is the best form and disposition of the former?”

“(2.)—What consideration should be given to temperature changes and consequent stresses?”

“(3.)—What are the best proportions for concrete, and what is the best method of placing it?”

The discussion was opened by R. S. Buck, M. Am. Soc. C. E., who followed his opening discussion by reading a paper by Leon S. Moisseiff, Assoc. M. Am. Soc. C. E.

The discussion of the subject was continued by the following:

J. R. WORCESTER, M. Am. Soc. C. E.
H. S. JACOBY, Assoc. Am. Soc. C. E.
LEONARD C. WASON, Assoc. M. Am. Soc. C. E.
A. L. JOHNSON, Assoc. M. Am. Soc. C. E.
WILLIAM PARKER, M. Am. Soc. C. E.

The meeting then took up the discussion of the third topic, as follows:

“The Decolorization of Water: When is it necessary? How may it be accomplished?”

The discussion was opened by G. C. Whipple, Assoc. M. Am. Soc. C. E., and the subject was further discussed by the following:

ALLEN HAZEN, M. Am. Soc. C. E.
GEORGE A. SOPER, Assoc. M. Am. Soc. C. E.

GEORGE W. FULLER, Assoc. M. Am. Soc. C. E.
J. P. A. MAIGNEN, Assoc. Am. Soc. C. E.
J. N. CHESTER, M. Am. Soc. C. E.
FREDERIC P. STEARNS, M. Am. Soc. C. E.
FRANK A. HINDS, M. Am. Soc. C. E.
CLEMENS HERSCHEL, M. Am. Soc. C. E.
DESMOND FITZGERALD, M. Am. Soc. C. E.
H. F. DUNHAM, M. Am. Soc. C. E.

A motion, introduced by Mr. J. N. Chester, that a committee be appointed by the President to report to a future business meeting on the advisability of adopting a standard for turbidity and color in water was, after some discussion, lost.

Adjourned.

Fourth Session, Thursday, June 27th, 1901.—The meeting was called to order at 10.30 A. M.; President Croes in the chair; Charles Warren Hunt, Secretary.

The meeting took up the discussion of the fourth topic, as follows:

“The Consumption of Water in Municipal Supplies and the Restriction of Waste.”

The discussion was opened by Emil Kuichling, M. Am. Soc. C. E., and was continued by the following:

CLEMENS HERSCHEL, M. Am. Soc. C. E.
DEXTER BRACKETT, M. Am. Soc. C. E.
GARDNER S. WILLIAMS, M. Am. Soc. C. E.
EDWARD FLAD, M. Am. Soc. C. E.
C. W. HUBBELL, Assoc. M. Am. Soc. C. E.
J. N. CHESTER, M. Am. Soc. C. E.
JOHN C. TRAUTWINE, Jr., Assoc. Am. Soc. C. E.
RUDOLPH HERING, M. Am. Soc. C. E.
DESMOND FITZGERALD, M. Am. Soc. C. E.
D. C. HUMPHREYS, M. Am. Soc. C. E.
JAMES OWEN, M. Am. Soc. C. E.
J. P. A. MAIGNEN, Assoc. Am. Soc. C. E.
OBERLIN SMITH, M. Am. Soc. C. E.
J. H. HARLOW, M. Am. Soc. C. E.
H. F. DUNHAM, M. Am. Soc. C. E.
J. JAMES R. CROES, M. Am. Soc. C. E.

Resolutions of thanks were unanimously tendered to the New York Central and Hudson River Railroad Company for free transportation for the members of the Society and their guests between Niagara Falls and the Pan-American Exposition Grounds; to the Engineers' Society of Western New York; to the Niagara Railway Arch Bridge Company and to the Niagara Falls Power Company.

Adjourned.

BUSINESS MEETING.*

Tuesday, June 25th, 1901.—At the close of the first session the Business Meeting convened. President J. James R. Croes in the chair; Charles Warren Hunt, Secretary.

The Secretary presented the report of the Board of Direction on the proposition that a Special Committee on Standard Rail Sections be appointed.†

On motion, duly seconded, the report was received, the recommendation of the Board of Direction adopted, and a ballot ordered.

The proposed amendment‡ to the Constitution, the purport of which is to place the election of all members in the hands of the Board of Direction, was presented by the Secretary. After discussion it was decided that a committee of seven be appointed by the President, one representative from each of the seven geographical districts into which the Society is divided, to report to the Annual Meeting of the Society in January, 1902.

The Secretary presented the result of the vote on the Time and Place for holding the Annual Convention of 1902.§ The whole matter was referred to the Board of Direction, with power.

The Secretary announced the appointment by the Board of Direction of the following Committee to recommend the award of prizes for the year ending with the month of June, 1901:

MESSRS. CHARLES McMILLAN, O. H. ERNST and EDWARD FLAD.

The Secretary announced the death of THOMAS CURTIS CLARKE, Past-President, Am. Soc. C. E., elected Member, March 18th, 1868; Fellow, May 20th, 1872; died June 15th, 1901.

Adjourned.

OF THE BOARD OF DIRECTION.

(Abstract.)

June 4th, 1901, 8.15 P. M.—President Croes in the Chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Briggs, Haines, Knap, Kuichling, Noble, Osborn, Ricketts, Seaman, Turner and Whinery.

The Library Committee was empowered to arrange with the New York Railroad Club, or any similar organization, for one of its meetings to be held in the Auditorium and Lounging Room only of the House of this Society, as an experiment.

A report to be presented to the Society in the matter of the proposed appointment of a Special Committee on Standard Rail Sections was adopted.

* For full report, see p. 144.

† See p. 151.

‡ See p. 149.

§ See p. 158.

The President was authorized to appoint a Committee to recommend the award of prizes for the year ending with the month of July, 1901.

The subdivision of the Society membership into seven geographical districts was considered, and no change was made.

Applications were considered and other routine business transacted.

One candidate for Associate and five for Junior were elected.

Adjourned.

June 25th, 1901.—The Board met, as required by the Constitution, at the Annual Convention, Niagara Falls, N. Y., President Croes in the Chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Briggs, Knap, Knichling, Osborn, Swain, Turner and Wallace. There being no business to be brought to its attention, the Board adjourned.

**REPORT IN FULL OF THE FIRST SESSION OF THE THIRTY-
THIRD ANNUAL CONVENTION, INCLUDING THE BUSI-
NESS MEETING, HELD AT THE INTERNATIONAL
HOTEL, NIAGARA FALLS, N. Y., TUESDAY,
JUNE 25th, 1901.**

Meeting
Convened.

Tuesday, June 25th, 1901, 10.45 A. M.—President J. James R. Croes, in the chair; Charles Warren Hunt, Secretary.

The **PRESIDENT**.—I will call upon Mr. George A. Ricker, Chairman of the Committee of the Engineers' Society of Western New York, on the reception of visiting engineers, to welcome the Society to Buffalo and its vicinity. (Applause.)

Address
of Welcome.

GEORGE A. RICKER, M. Am. Soc. C. E.—Mr. President, Ladies and Gentlemen. It is my very pleasant duty to accord to you a welcome on behalf of the Engineers' Society of Western New York. This privilege should have been grasped by the President of our Society—that, I am sure, will be obvious to you—but, unfortunately, that gentleman, although he has reached years of discretion, I hope, is a very diffident man, and the mere thought of facing an assemblage of this size and character, quite frightened him, and he assigned this very pleasant duty to his former assistant; and it is not the first time that duties, pleasant and unpleasant, have been assigned by him to me. (Laughter.)

Since your last meeting at Niagara Falls, developments of a very interesting character have taken place on the frontier, and next perhaps to the work of Major Symons, who will follow me, I believe, to tell you something of his splendid work in the improvement of Buffalo Harbor, I think the iron industry, or the development of the production and manufacture of iron and steel, will probably be the most interesting to you as engineers. The furnaces at Tonawanda, which were closed during the several years of the recent depression in business have been started again, and are now producing to their full capacity. In Buffalo there have been built, since 1894, three furnaces, two that are now in blast and have been producing iron for several years, and a third which has within the last week gone into blast, this third being a charcoal furnace. At the southwesterly corner of the city, on the lake front, is another very large plant just started, the Lackawanna Iron and Steel Company. We know but little of the plans of this company, as it is very secretive, but the newspapers have from time to time contained statements to the effect that they would produce many thousand tons of iron. But the surest indications of what they are doing and will do in the future, are the extensive buildings now in course of construction. A contract was recently let, I am informed, for extensive harbor improvements, and some 16 or 17 furnaces will be built this fall. I think I am right in saying that this

company is capitalized at \$25 000 000, so you see it is a pretty big thing. The operations of this concern, together with the others to which I have referred, indicate that Buffalo is becoming an iron center, and it is the thing for which we have been working and fighting for a long time. You are all more or less familiar with the advantages that Buffalo enjoys for the production of iron and for the distribution of material.

Next to the iron industry, and aside from the wonderful electrical development which has taken place at Niagara Falls, and of which you all know a good deal, is the electric railroad construction which has gone on. In the City of Buffalo there are, approximately, 200 miles of railroad track, all of which has been reconstructed within the past four or five years. The light rails, T's and girders, that were down, have been replaced by heavy girder rails, and the track throughout almost the entire city has been underpinned or founded on a concrete base, and I think you will agree with me, when you ride over the road in Buffalo, that it makes a very good track indeed. The suburban lines have pushed out into the outlying territory, and the most important of these lines is probably that connecting Buffalo with Niagara Falls. It is a very good line and is carrying a great many people. Another project of interest, which has been built since you were here last, is the road down the Niagara Gorge. I think this is a very interesting piece of work, and I hope you will all see it before you go away.

Our committee was notified by your Secretary that you did not want us to do very much in the way of entertainment, and that we should not plan very many functions for you. Our privileges as members were therefore limited, and we have tried to furnish you with such information as will assist you in seeing Niagara and the Exposition. Undoubtedly, you have decided to spend a good deal of time at the Exposition, apart from the meetings which you will have here, and I think you will be well repaid. We have had prepared for you maps of the City of Buffalo, showing the railway facilities, and on the reverse side of the map a bird's-eye view of the Exposition. This will enable you to find your way about the grounds and to the various buildings. We have also had prepared and furnished for you a special edition of the Official Programme of the Exposition for the several days of the Convention, and I am advised that to-day's edition is here ready for your use.

I will not take up your time further, but will just conclude by commending to you the prayer of that little girl who, when her family were about to leave for their summer home, said, "Good bye, God, we're going to Saratoga." (Laughter.)

On behalf of the Engineers' Society of Western New York, I bid you a most hearty welcome. (Applause.)

The PRESIDENT.—It gives me very great pleasure to receive, on

behalf of the American Society of Civil Engineers, the very kind welcome that the Engineers' Society of Western New York has given us.

The President then presented the Annual Address.*

Programme
of Convention.

The SECRETARY.—Mr. President, I have been asked so many times for a printed programme of the Convention that I think perhaps it will be well to recite the brief programme that has been arranged.

It is hoped at this meeting, before we adjourn, to finish the business session of the Society. That will leave the entire afternoon free for a visit to the Pan-American. This evening at 8.30 Mr. Walter McCulloh will deliver a lecture, or address, on "The Bridges of Niagara," illustrated by the stereopticon, in this room. To-morrow morning at ten o'clock there will be a meeting of the Society for the discussion of four professional subjects, which have been already enumerated in the programmes sent out. That, so far as the Committee is concerned, ends the official programme. If this business meeting, or if the meeting of to-morrow, fails to get through with the business it has in hand, there will be an adjournment, of course, to some other stated time.

I might say, also, that to-morrow, at about 2.30, through the courtesy of the New York Central Railroad Company, to which the Society is indebted for the transportation which has been distributed to all members and their families, but has not yet been used, a special train will leave here at about the hour named. There has been arranged, by the local Committee of Arrangements, a reception to the Society at the Temple of Music at four o'clock in the afternoon. I understand that Mr. John G. Milburn, the President of the Pan-American, and Hon. Wm. I. Buchanan, the Director-General, will be there to speak to the Society and welcome it, and I have just received a telephone message from Dr. David T. Day, Superintendent of Mines and Metallurgy of the Pan-American Exposition, who has invited the members of the Society and their guests, immediately after the reception in the Temple of Music, to visit the Mines Building, which at that time will be closed to all others, and reserved for the exclusive use of members of the Society.

Announcements.

I also have one or two other announcements, Mr. President, as follows:

"NIAGARA FALLS, N. Y., June 22d, 1901.

"*Secretary, American Society Civil Engineers,*

"Niagara Falls, N. Y.

"DEAR SIR,—The Directors of the Niagara Railway Arch Bridge desire to offer the freedom of their bridge to the American Society of Civil Engineers during their Convention in this city.

"All members and their guests will be passed on presentation of their badges.

"Yours respectfully,

"THOS. REYNOLDS,
"Superintendent."

* Transactions, Am. Soc. C. E., Vol. xlv, p. 599.

"NIAGARA FALLS, N. Y., June 24th, 1901.

"*Secretary of American Society of Civil Engineers,*

"International Hotel,

"Niagara Falls, N. Y.

"DEAR SIR,—We desire to extend a cordial invitation to the members of the American Society of Civil Engineers and their families to visit the Power House of this Company at their convenience during the time of their Convention in this city.

"Visiting hours are from 9 A. M. to 5.30 P. M. on week days and from 10 A. M. to 4 P. M. upon Sundays. Badges of the Association will be honored by those in attendance.

"Very truly yours,

"THE NIAGARA FALLS POWER COMPANY, .

"By F. L. LOVELACE,

"*Secretary.*"

"BUFFALO, N. Y., June 22d, 1901.

"CHARLES WARREN HUNT, Esq., *Secretary,*

"*American Society of Civil Engineers,*

"International Hotel, Niagara Falls, N. Y.

"DEAR SIR,—The Gruson Iron Works beg to call your attention to their exhibit at the Pan-American Exposition, and to invite all members of the Society present at the Convention to visit this exhibit, for which cards have been prepared showing its exact location.

"As this is the first effort to manufacture these turrets outside of Germany, we think the matter will be very interesting to our members, not alone the military engineers, but the civil engineers as well, who are included in the Society.

"Proper explanations will be made to those visiting the exhibit by attendants in charge, who will be constantly on duty at all times for this purpose.

"Very respectfully,

"GRUSON IRON WORKS,

"P. H. GRIFFIN,

"*President.*

"T. GUILFORD SMITH,

"*Treasurer.*"

The PRESIDENT.—I will now call upon Major Symons to address you. Major Symons, as many of you know, has charge of the Government Harbor Works. Invitation to visit Buffalo Breakwater.

THOMAS W. SYMONS, M. Am. Soc. C. E.—Mr. President, Ladies and Gentlemen, our Local Committee was not allowed to prepare any special plans for your entertainment, and therefore whatever I can say or do will be rather in an individual capacity and in an informal way. I think it can be taken for granted that, aside from the Pan-American Exposition, the most interesting feature about Buffalo is its harbor and the methods of doing business therein. Buffalo is one of the great ports of the world. It stands, I think, fifth or sixth in importance in the quantity of the commodities handled. To improve its commercial facilities, the Government, through my associates and myself, are building the greatest break-

Invitation to
visit Buffalo
Breakwater
(continued).

water in the world. This breakwater, when it is completed, will be almost twice as long as any other breakwater in the world. A portion of it is built of stone and gravel on quite a new plan, and has quite a number of unique features. It has recently been described in *Engineering News*. I should like to have as many of the members of the Society as choose take a look at it, and the methods of its construction. We also have had in the harbor an evidence of what the power of water can do, in destroying a portion of our timber crib breakwater, which was destroyed last fall by the tail end of the Galveston storm, which came around up this way. In its present condition it is a very beautiful illustration of what water can do. We are going to repair that by putting on a concrete superstructure on a new basis. Instead of being solid concrete, the superstructure will be one of concrete filled with stone, the concrete giving strength, and the stone the necessary weight. The arrangement of the concrete plant will, I think, also be of interest to you.

I have a boat which will carry comfortably 40 people, and I want to place that boat at the disposal of the Society, or any members of the Society that choose to take a run about Buffalo Harbor to see the harbor, and the methods of transacting business there, and to go out in the lake and see the methods of building this new breakwater and its extent.

I do not want to formulate any plans for this, but will be at your disposal, and Mr. Prentiss, Mr. Low or myself, all members of the Society, will go out with you and explain everything that we can. I think probably the better way will be for those who wish to go to hand in their names, and we will take particular pains in taking you out. (Applause.)

The SECRETARY.—Mr. President, the souvenir diagram furnished by the Local Committee, and the official daily programme of the Pan-American Exposition are now here and ready for distribution at the close of the business meeting. They can be had after the business meeting adjourns.

Adjourned.

BUSINESS MEETING.

Business
Meeting
Proposed
Special
Committee on
Rail Sections.

The PRESIDENT.—The business meeting will now convene, and any who are not interested therein will have an opportunity to leave the room if they wish to do so.

The President announced as the first order of business the reading of the minutes of the last meeting.

On motion of Mr. Crowell, duly seconded, the reading of the minutes was dispensed with.

The PRESIDENT.—The report of the Board of Direction on the proposed Special Committee on Standard Rail Sections, will be read by the Secretary.

**REPORT OF THE BOARD OF DIRECTION ON PROPOSED
APPOINTMENT OF A SPECIAL COMMITTEE
ON RAIL SECTIONS.**

"The Board of Direction presents the following report, under Article VI, Sec. 12, of the Constitution, on the proposition that a Special Committee on Standard Rail Sections be appointed.

" ARGUMENTS IN FAVOR.

"1.—The American Society of Civil Engineers has already recognized this subject as a proper one for consideration and report by a Special Committee.

"2.—The Special Committee, thus authorized, became convinced that experience in the use of steel rails had reached a stage at which standard patterns were not only feasible but desirable, and, accordingly, in August, 1893, recommended a series of rail sections for given weights per yard.

"3.—The result of the report of the Special Committee may be indicated by these two facts: *First*, that in February, 1881, the rail mills in this country had 188 different patterns which were considered standard, and that 119 patterns of 27 different weights per yard were regularly manufactured; *Second*, that in 1899, or six years after the publication of the report of the Special Committee, fully 75% of all the rails rolled in the United States were of the pattern recommended in that report.

"4.—It would seem, therefore, that a suggestion that these sections are in any respect unsatisfactory should not be disregarded, for if the sections now recognized as Standard are to be modified in any respect, such modification should have an endorsement of significance equal to that given to the original sections.

"5.—To investigate and report upon engineering matters which are of general interest to the profession, is a distinctly proper function of this Society. It is submitted that a report from a Special Committee on Rail Sections should summarize the present state of the art of rail-making, and cover an investigation of all questions relating thereto whether of section, composition of the material, or processes of manufacture, and that such a report, whether it recommended a change in any of the sections heretofore established or not, would be of great value.

" ARGUMENTS AGAINST.

"1.—The rail sections recommended by the Special Committee of the Society in 1893, have been very generally adopted, and are now recognized as Standard.

"2.—Well established standards should not be questioned without good reasons, and no Special Committee should be appointed to reconsider the present standard sections unless upon evidence that a change of section is necessary, or advisable.

"3.—No such evidence has been placed before the Society or the Board of Direction.

"4.—In any case it does not appear that a Special Committee, if appointed, should be limited by its instructions to the consideration of proposed changes in section alone, as questions of composition and manufacture may be quite as influential in any failure of the present standard sections to meet requirements which may be demonstrated.

"RECOMMENDATION.

Report on
Proposed
Special
Committee on
Rail Sections
(continued).

"After careful consideration, the Board of Direction, believing that the reasons in favor of the appointment of the proposed Committee outweigh those against such appointment, makes the following recommendation:

"That a Special Committee be appointed, as provided in the Constitution of the Society, for the following purposes:

"1.—To report upon the results obtained in the use of rails of the sections presented to the Society in Annual Convention, August 2d, 1893, by a Special Committee appointed for that purpose.

"2.—To report whether any modification of any of said sections is advisable, and if so to recommend such modification.

"3.—To report upon the recognized practice as to chemical composition and mechanical treatment used in the manufacture of rails, and the manner of inspection of the same.

"4.—To report upon the advisability of the establishment of a form of specification covering the manufacture and inspection of rails.

"5.—If found advisable, to recommend a form of specification for the manufacture and inspection of rails."

"By order of the Board of Direction.

"CHAS. WARREN HUNT,
"Secretary."

Major SYMONS.—Mr. President, I would like to state that several members have indicated a desire to go out on the boat to-morrow morning and inspect the harbor, and I beg leave to announce that the boat will leave the foot of Main Street, Buffalo, at half after nine, and we will be glad to take all that will go. If the boat will not hold them all, I will have a tug there that will take any more that come.

The SECRETARY.—My attention has been called to the fact that on the Official Programme for to-day the statement is made that there will be a reception to delegates at the Temple of Music at 3.30 p. m., and that that statement is in error. That reception will take place to-morrow, as before stated, at four o'clock.

The PRESIDENT.—Is there any discussion of this recommendation of the Board of Direction? If it is approved by the Convention, the recommendation will be sent out to letter-ballot.

ROBERT MOORE, M. Am. Soc. C. E.—Mr. President, I move that this meeting approve and adopt the recommendations formulated by the Board of Direction. I wish to say that the subjects covered by this investigation are certainly very important, and that I, personally, have had suggestions from railroad managers, not members of this Society, urging that such action be taken, and I think there is a very general sentiment to this effect among those interested.

(The motion was seconded and carried.)

The PRESIDENT.—The proposed amendment to the Constitution is next in order for consideration.

Proposed
Amendment
to the
Constitution.

The SECRETARY.—Mr. President, the Secretary has received, in com-

pliance with the Constitution, the following proposed amendment to the Constitution:

“Amend Article III of the Constitution as follows:

“(a) By changing the numeration of the present paragraphs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11 respectively to 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, & 12.

“(b) By prefixing a new paragraph, . . . 1 . . . , to read as follows, viz, ‘1.—Election to membership in every grade shall be by the Board of Direction and respectively as hereinafter provided.’

“(c) By striking out the concluding ten words in the present paragraph 3 newly numbered 4 and substituting in place thereof the following, * * * ‘may then proceed to take action on the applications.’

“(d) By inserting in the first line of new paragraph 5, after the first occurrence of the word ‘ballots,’ the words ‘for the election of Corporate Members.’ Also by striking out the word ‘Corporate’ before Member in the second line and inserting the words ‘of the Board’ after the same. Also by striking out the three concluding lines and substituting therefor, the following, viz, ‘Three or more negative votes shall prevent an election of a candidate. In the case of election the Board shall at once notify the membership. In the case of failure to elect the candidate shall be notified. In either case, all the correspondence pertaining thereto shall be preserved by the Board.’

“(e) By striking out all of the present paragraph 5, newly numbered 6, and substituting therefor a new paragraph 6, as follows, viz, ‘6.—In case of failure to elect a candidate a new application by the same candidate shall not be accepted or considered until after the expiration of one year from the date of the ballot at which his name was last presented for election.’

“Proposed by { FOSTER CROWELL,
B. M. HARROD,
W. J. HARDEE,
HENRY B. RICHARDSON,
JOHN FINDLEY WALLACE,
CHARLES L. STROBEL,
RALPH MODJESKI.”

The SECRETARY.—Mr. President, this amendment having been proposed properly under the Constitution, comes for discussion before this meeting, and, according to the Constitution, may be amended in any manner pertinent to the original amendment. If so amended it is sent out to letter-ballot. If not so amended it is sent out as sent in.

The PRESIDENT.—Then, the one you have just read was an amendment to an amendment, was it not?

The SECRETARY.—No, sir; it is a proposed amendment to the Constitution of the Society.

The PRESIDENT.—That was the amendment?

The SECRETARY.—Yes, sir; that was the amendment.

The PRESIDENT.—Are there any amendments proposed to this amendment to the Constitution?

Discussion
on Proposed
Amendment
to the
Constitution.

Discussion
on Proposed
Amendment
to the
Constitution
(continued).

FOSTER CROWELL, M. Am. Soc. C. E.—Mr. President, before you put that question, I would say that I think the Secretary omitted to explain another provision of the Constitution in regard to such matters, and that is that this body need not take any action upon it, other than to refer it to a committee. The effect of the reference to a committee would be to have the time for consideration deferred; that the Committee, under the Constitution, would report upon the measure at the next meeting of the Society, in January of next year; so that beyond the advantage of discussing the matter here, there would be an opportunity for consideration by the Committee and a further discussion at the next Annual Meeting, with the light that the Committee's investigation would shed upon it. Do I understand that the subject is in order for discussion now, Sir?

The PRESIDENT.—Yes.

Mr. CROWELL.—I wish to say, as one of the signers of this proposed amendment, that it is not necessary for me to say, really, that it does not emanate from the Board in any way, but is from some whose experience on the Board has led them to conclude that the interests of the Society, the standard of membership, the character of future candidates will be improved by a change from the old method which this Society has followed since its early years, and will put the matter where all the other important affairs of the Society are placed, in the hands of the Board.

It has been customary for members sometimes to consider the Board as one part of the Society and the membership at large as another part. I think that view need not prevail, but the Board should be considered as comprising, or representing, that which is valuable or useful in the whole membership. They are our representatives from all parts of the country, from all the territory which we cover, and they are safely to be entrusted in the first instance with this duty. In the second place, their position gives them a better opportunity to discuss disinterestedly the characteristics of candidates. In the third place, we depend on them, anyway, as at present.

In reading the amendment over you will perceive that, in one important, and the most important, respect, the method is changed. All the rest is contributory to that change. In that way, in the form proposed, we put the election absolutely in the hands of the Board. But we do not propose to take away the opportunity which now exists through the Blue List of giving the membership just the same means as it has at present for conveying any knowledge it may have which would tend to prove a candidate unworthy of election. It is deemed by those who have signed this amendment that the Board will be in a position to get at the facts in these cases more readily than if the responsibility rests, as at present, upon the whole membership. What do we, as members, know about a candidate, in so large a body as

this, except what the Board tells us when it puts a name on the final ballot-list for election? We may know in some cases, we may have an intimate personal acquaintance in some cases, but, as a rule, we rely upon the endorsement of the Board conveyed in that informal way of putting them on the ballot, and we vote accordingly.

Another advantage, as we think, obtained by this amendment, would be the doing away with the pink ballot. I do not know how many members admire the pink ballot for its color, but I think that its frequent occurrence on our desks has come to be somewhat monotonous, even from an artistic point of view, and apart from that color I can see no advantage in it whatever. It was designed to remedy an evil, the evil of persecution of candidates, but its practical effect has been, it seems to me, simply to substitute for the first form of rejection the second. That is to say, a rejected candidate will always go for the pink ballot, and the other feature is a mere formality in most cases. This would do away with that altogether. It would place the responsibility of the election of a candidate upon the Board; and I move, Mr. President, that this amendment be referred to a committee to be appointed by this meeting, to report at the next Annual Meeting of the Society, in January, 1902, in accordance with the provisions of Article IX, Section 3, of the Constitution.

(The motion was seconded.)

BERNARD R. GREEN, M. Am. Soc. C. E.—Mr. President, it occurs to me that in formulating rules governing elections, it would be well if provision were made for securing a vote from all the members of the Board, whether they happened to be in attendance at a meeting or not. In that way the representation of the Society would be safeguarded in the election of members by the Board as well as by the Society at large. It should require more than a majority of those present. I do not know but that the rules are already so arranged, or that it is expected that they will be.

The SECRETARY.—I think this amendment provides for that, Mr. President. It is the intention of this amendment to provide for a ballot of the Board.

Mr. GREEN.—It does not seem to me to require a complete representation of the Board for the election of members, where, in my opinion, it should do so.

The PRESIDENT.—The motion is to refer this proposed amendment to the Constitution to a committee, to report at the Annual Meeting of the Society in January, 1902, as to its advisability.

The SECRETARY.—Mr. President, do I understand that they are confined to the consideration of this amendment only?

The PRESIDENT.—A consideration of this amendment, I take it, would involve a consideration of alterations in the amendment.

Mr. CROWELL.—Mr. President, can the Secretary read the article of

Discussion on Proposed Amendment to the Constitution (continued). the Constitution which covers the appointment of such a committee? I think that would clear it.
(The Secretary read from the Constitution the article covering the point in question.)

The SECRETARY.—That is the reason I asked the question. It seems to me that the Constitution would confine that committee to the consideration of the propositions contained in this amendment, and there are two or three things, it appears to me, from a somewhat intimate acquaintance with the method of elections in the Society, which ought to be brought up, but which are not brought up in this amendment. One that I will mention is that now-a-days a candidate classes himself before he comes before the Society. It seems to me that there ought to be a change in this, and that when a man applies for admission to the Society, the Board should get all the information which it now gets after he has applied for a certain grade, and then should notify the candidate what he is eligible for, and then, upon his acceptance, his name should go to ballot. I merely suggest this point here to show that there are some other things which ought to be considered in dealing with this subject.

Mr. CROWELL.—It seems to me that the term "consideration by this committee," would, if a committee were appointed, carry with it the right of that committee to make any recommendations as to amendments, which would then come before the meeting. I think that would be the advantage of the consideration. It is to be noted, however, in respect to the matter that the Secretary has just referred to, that the amendment preserves the right of the Board to classify the member with his consent. I can readily understand Mr. Hunt's position that it is better not to have a re-classification, but only one classification, and that by the Board. But that and many other details would naturally occur to those having experience with the matter, and on a question so important as this we ought to have all the light shed upon it that it is possible to get. It was with that object in view that the proposed amendment was framed so that it could be referred to a committee, that we might profit from the light which the experience of the Board would throw upon it, and then when it comes up at the Annual Meeting we can have the recommendations of that committee before us for whatever further disposition we see fit to make of it.

The PRESIDENT.—I take it the "further consideration of the amendment" means a complete and thorough discussion of the whole subject embraced in the amendment to the Constitution, and might involve recommendations for changes. In that case such changes would become the amendment proposed. That language, "recommended for further consideration," opens the whole subject to that committee. The motion is now that this shall be referred to a special

committee to be appointed—the amendment shall be referred for further consideration to a committee to be appointed by this meeting.

C. FRANK ALLEN, M. Am. Soc. C. E.—I move, as an amendment, that the committee be entrusted with power to amend.

Mr. ROBERT MOORE.—Mr. President, would not the meeting itself be the power to make the amendment which might be recommended by this committee? Only the meeting itself could actually do that.

Mr. CROWELL.—You cannot destroy this amendment. As it stands now it must be considered, or amended, by a meeting and not by the committee.

Mr. ALLEN.—It occurred to me that this Society, having the power to amend, could delegate that power to this committee. I see nothing in the Constitution to interfere with that.

The PRESIDENT.—I will rule that “further consideration of this amendment” would involve a recommendation for the rejection or alteration of this amendment.

Mr. CROWELL.—Mr. President, I think that last clause in the last article which the Secretary read, would rather indicate that that is not the intention.

The PRESIDENT.—The Chair rules differently.

EDWARD P. NORTH, M. Am. Soc. C. E.—I would like to say that while I have a good deal of sympathy with the amendment proposed and the views of the gentlemen who proposed it, it seems to me that it is not exactly the way to attack this problem. As I read the proposed amendment it merely results in withdrawing one safeguard we have against the admission of unworthy members; for the Board is able now, and has, to my certain knowledge, in times past, withheld its assent to a proposed member's going on the ballot-list, and has effectually kept him out, more effectually than if he had been voted for, because so long as they refuse to put him upon a ballot-list he cannot possibly be elected. That is a recourse which the Society has, and, as I say, has used. We have now the additional recourse that each man can vote against a member, if for any reason he thinks that proposed member is unworthy of admission. I am sorry to make a personal remark, but I have been honored with a position on the Board of Direction two separate times, and I say it with some diffidence, but I wish to say, personally, that the Board of Direction is not so constituted that it can be trusted to decide whether a proposed candidate is fit for membership or not. There is a scrutiny required which cannot be given when the committee charged with that happen to be either regularly or for a short time busy, and, as a result, persons have gone to ballot who should not have gone to ballot, and men have been advanced to full membership when they were not qualified for it, and I think one man was elected who ought not to have been elected, through the carelessness of the Committee of the Board of Direction that was charged

Discussion
on Proposed
Amendment
to the
Constitution
(continued).

with scrutinizing the list; and it was my carelessness in one case, so you will all see that I have a right to speak of it. For that reason, I think, while it is better that there should be a change in our Constitution in regard to this—and more particularly in the matter of classification, of which Mr. Hunt has spoken, and which has given us a great deal of trouble—I think it is not quite safe to adopt the change in the Constitution that has been asked for.

Mr. MOORE.—Mr. President, I think the only question before the meeting is that of a reference to a committee.

The PRESIDENT.—That is the question now.

Mr. MOORE.—And it seems to me this is a very wide movement. I think the whole matter is one that needs to be very carefully considered and discussed before final action is taken. For myself, I do not know how I should vote on the matter. I feel that some modification of the proposal as offered should be made; but as a means of complete discussion, I think the reference to a committee is a wise step, and as the Chair interprets it that this committee has the utmost latitude of recommendation, their recommendations to take effect only upon their being adopted by the meeting, that will open the subject to the fullest discussion. I hope the motion will pass.

PALMER C. RICKETTS, M. Am. Soc. C. E.—It seems to me, Mr. President, that the composition and number of this committee are somewhat important considerations, if a committee is to be appointed, and for obvious reasons. It seems to me that it would be very advisable to have this committee a large one, and to have it composed, possibly, of members of the Society who had been on the Board of Direction, and who did not reside within 300 miles of the City of New York.

The PRESIDENT.—I would like to ask the gentleman whether he thinks it would be well to disfranchise the members who happen to reside within 300 miles of New York, or whether it would be better to appoint a committee consisting of the same number as the sections into which the Society is divided, and thereby give local representation to everybody.

Mr. RICKETTS.—I did not mean to disfranchise any member of the Society, but I think I touched in that remark a very crucial point. I am a member of the Board of Direction, and I know very well how things go. I have perfect confidence in the Board of Direction, but I also know very well the feeling of the general membership of the Society, outside of the State of New York, say, and within a certain radius. Now, what is the use of wasting powder, or the use of discussing this thing for a year or two, only to get back to where we are? That is the reason I thought it would be very desirable to have that committee composed in that way. It is not necessary to disfranchise any member of the Society in order that a certain committee may be appointed, without appointing members from certain sections. I think

we will get at the matter most closely and most easily and quickly by appointing the committee in the way I suggested.

JAMES OWEN, M. Am. Soc. C. E.—There is one point that I want to call attention to on this matter. Mr. President, the election of members of this Society, that I do not think is very often considered, and that is that the procedure as followed now is to a certain extent an ordeal. I think there are a great many engineers in this country who are worthy to be members, and should be members, but are afraid to apply under present conditions, because they do not think they will be able to get through. I have known men to apply to me, and I have applied to the Board of Direction on their behalf, to ascertain whether they thought that it was possible for these men to become members of the Society. Personally, I know there have been men who were eminently qualified to be elected members, but they were diffident—and we sometimes have diffident men among engineers. Now, diffident men are very often the best men, and the procedure we have now is mainly to determine the progress and increase of applicants in that direction.

There is also another point I want to call attention to, and that is this: There are a great many men who are working in the profession in different parts of the United States, who are not in communication with members of the Society and are not employed by them. The result, under the present system, is that they have great difficulty in getting the requisite official endorsement from members of the Society. I remember, personally, one case of a very estimable young man, a man in a highly responsible position, who was fully and properly qualified for membership, but who was unable, owing to his peculiar situation and experience in the profession, to get an endorsement. That is a point, I think, which ought also to be considered.

R. S. BUCK, M. Am. Soc. C. E.—I would suggest, Mr. President, that this subject be first laid before the committee to be appointed. I do not think that this is the time to enter into a discussion of the different features of the proposition; and I would suggest that we confine ourselves to the appointment of this committee, because time is short.

THE PRESIDENT.—The question is whether such a committee shall be appointed. The definition of the number of that committee and the manner in which they should be appointed will come later. The question now is, simply: Shall such a committee be appointed?

(The President put the question, and it was determined in the affirmative.)

THE PRESIDENT.—Gentlemen, how shall that committee be appointed, and how many shall constitute it?

GEORGE S. DAVISON, M. Am. Soc. C. E.—Mr. President, I move that the committee be composed of fourteen members, two from each district, and that they be appointed by the Chair.

Discussion
on Proposed
Amendment
to the
Constitution
(continued).

(The motion was seconded.)

DESMOND FITZGERALD, Past-President, Am. Soc. C. E.—Mr. President, I move, as an amendment, that the committee consist of five. I think that is a better working number than 14.

Mr. MOORE.—Mr. President, I would then move to amend Mr. Fitzgerald's motion by making the number seven. It certainly should not be five. That would be one from each district.

The PRESIDENT.—Is that accepted by Mr. Fitzgerald?

Mr. FITZGERALD.—Yes, Mr. President, I accept that amendment.

The PRESIDENT.—It is moved that this committee consist of seven, one from each district, to be appointed by the Chair.

(The President put the question, and declared the motion carried.)

Mr. DAVISON.—I call for a division. I rise to a point of order. Is this question that we are now voting on to be discussed at this time?

The PRESIDENT.—We are voting now. I think we waited rather long for that.

(A division being had, the vote was—ayes, 78; noes, 14.)

The PRESIDENT.—The question comes, then, on the motion as it stands now, that this committee shall be appointed, to consist of seven, one from each district of the Society; the committee to be appointed by the President of the Society.

(The President put the question, and it was carried, ayes, 92; noes, 4.)

The PRESIDENT.—The next business is the time and place of holding the Annual Convention of 1902.

(The Secretary read the following report on this subject):

“NEW YORK, June 20th, 1901.

“TO THE AMERICAN SOCIETY OF CIVIL ENGINEERS:

“I beg to report the result of the ballot on Time and Place for holding the Annual Convention of 1902.

“Total number of votes received for Place, 275.

“Distributed as follows:

Washington, D. C.....	86	Asheville, N. C.....	4
Pittsburg, Pa.....	22	San Francisco, Cal.....	4
Boston, Mass.....	18	St. Louis, Mo.....	4
New York City.....	16	Cleveland, Ohio.....	4
Chicago, Ill.....	16	Saratoga, N. Y.....	4
Denver, Colo.....	10	Cincinnati, Ohio.....	3
Philadelphia, Pa.....	7	Richmond, Va.....	3
Atlantic City, N. J.....	5	White Sulphur Springs, Va....	3
New Orleans, La.....	5	Steamer, Buffalo and Duluth...	3

“The following places received 2 votes each:

Toledo, Ohio.	Long Branch, N. J.
Lookout Mountain, Tenn.	Colorado Springs, Colo.
Boston or New York.	Yellowstone National Park.
Los Angeles, Cal.	Milwaukee, Wis.
Charleston, S. C.	Atlanta, Ga.
	Sault Ste. Marie, Mich.

Report on
Time and
Place for next
Convention.

"The following received 1 vote each:

Baltimore, Md.	Birmingham, Ala.
Seattle, Wash.	Indianapolis, Ind.
Appleton, Wis.	Havana, Cuba.
Providence, R. I.	Halifax, N. S.
Bar Harbor, Me.	Kansas City, Mo.
Houston, Tex.	Memphis, Tenn.
Minneapolis, Minn.	Montreal, Canada.
Lake Champlain.	Some Western City.
Savannah, Ga.	Any place east of Chicago.
Salt Lake City, Utah.	Some point in New England.
Buffalo, N. Y.	Anywhere North.
Chattanooga, Tenn.	Anywhere South.
Old Point Comfort, Va.	Kansas City or St. Louis.
Great Lakes.	Saratoga Springs or White Sulphur Springs.
Mackinac Island.	Mackinac or Sault Ste. Marie.
Lake George, N. Y.	Bar Harbor or White Sulphur Springs.
City of Mexico.	Pittsburg or Cleveland.
St. Paul, Minn.	
Hotel Kaaterskill, N. Y.	

"Total number of ballots received on Time for next Convention, 214.

	No. of Votes.		No. of Votes.
February.....	1	August	7
March	2	August or September.....	1
April	4	September	15
May	13	October	3
Last of May or early in June..	2	October or November.....	1
May or October	1	December.....	1
June	117	Early in Spring.....	1
Last of June or early in July..	5	In the Spring.....	1
June or September.....	1	In the Summer.....	1
June or October.....	1	In the Fall.....	1
July.....	29	During the Exposition at Charleston, S. C.....	1
July or August.....	5		

"Respectfully submitted,

"CHAS. WARREN HUNT,

"Secretary."

Mr. BERNARD R. GREEN.—Mr. President, as a resident of the city which has received the largest number of votes, I beg to move that the subject be referred to the Board of Direction as usual for consideration and action; and in connection with that motion I wish to say that I am quite sure—we all who are in Washington and the District of Columbia and the neighborhood round about—that Washington will be one of the most, and I think next year, the most attractive place for a convention to be held. Washington had the convention nineteen years ago. That is, it will be twenty years next year. Next year will be the fiftieth anniversary of the original organization of the Society.

Discussion on
Time and
Place for next
Convention.

Discussion on
Time and Place
for next
Convention
(continued).

Washington is well recognized already as the Convention City, with all due respect to certain other cities in the country which claim that distinction, and that is proved by the fact that many societies hold all their annual conventions there. No society, I believe, neglects Washington altogether, and many of them go there often, if they do not go every year. It has grown and doubled in interest, population and everything else, since this Society was there nearly twenty years ago. It is interesting in every way, and next year, besides the engineering interest of the Proving Grounds at Indian Head, the burial place of the first surveyor of the United States (laughter), the Cabin John Bridge, the Washington Monument and other engineering features, Congress will be in session next year. That is, as you know very well, the most interesting and perennial engineering ground in the United States. (Laughter.) It will be the long session, and if you come there in the latter part of May you will be in good time not only to find the city more beautiful than any other in the country, but you will also find Congress and all its friends and yours there, and the local committee will be sure to make the whole entertainment quite as fine as you will wish. Washington and the District of Columbia have increased in membership in the Society. We have now there resident about 60 members of the Society, and Baltimore is near by and has become a very respectable suburb, so that we recognize it in Washington. We even invite them over to our meetings, and they come. Richmond is not far away, and around about we have a pretty large and respectable representation of the membership of the Society. I am sure that Washington City would be the proper place for next year on all accounts, and I hope the Board of Direction will select that place.

H. M. WILSON, M. Am. Soc. C. E.—Mr. President, in seconding Mr. Green's motion, I wish to add only a few words which will show further how far a consideration of the holding of a convention next year in Washington has gone among the local members. Our city claims the second largest resident membership of any city after New York, and at a meeting of the local residents in May, 41 who were present voted unanimously to invite the Society to hold its next convention in Washington in the latter part of May next, and they pledged themselves to do all in their power to entertain you in a most appropriate and most hospitable way; so that you will see preparation has already been made for your entertainment. After Mr. Green's eulogium of Washington, I will only say that there are some very important engineering works going on there which he has overlooked, the most prominent of which just now is the great filtration plant for the City of Washington, which is under way, and I may add that there are some delightful excursions to be taken from Washington in connection with the tomb of the first surveyor, as Mr. Green expresses it,

and other points of interest. May is the month of the year, also, in which planked shad is to be had in a perfection of quality beyond anything to be found elsewhere in the United States.

Mr. DAVISON.—Mr. President, in behalf of a city that I see has received a few votes, I am very sorry to hear that the Washington people have gone so far as to get ready for us; otherwise, I would have insisted upon your all coming to Pittsburg next year. I hardly feel as though we should interfere now, and, without consultation with any of the gentlemen from Pittsburg, I think I am privileged to say for all of them that if you should not decide to go to Washington you will certainly be welcome in Pittsburg. It is a town of which there is very little known, and we do not have much to say about what we are doing down there, but, all the same, you will be just as welcome there as in any other city or seaport town in the United States. (Applause.)

(The President then put the question on the motion that the time and place for the next Annual Convention be left to the Board of Direction, and it was determined in the affirmative.)

The SECRETARY.—Mr. President, a resolution has been handed to the Secretary. He does not remember exactly whence it came, but presumes it should be read.

Resolution
Relative
to Holding
the 1903
Convention at
St. Louis.

“The American Society of Civil Engineers learns with satisfaction that an International Exposition will be held in the City of St. Louis in 1903, in commemoration of the purchase from France, by Thomas Jefferson, President of the United States, of the vast territory known as the Territory of Louisiana.

“It is a matter of public information that Congress has recognized this exposition project by making an appropriation of five millions of dollars in aid of it, and by providing for a National Commission which has been appointed by the President, and by making an additional appropriation of \$250 000 for a Government building and exhibit.

“The people of Missouri have amended their constitution and appropriated one million dollars for the State's participation. The citizens of St. Louis and the municipality have appropriated ten millions of dollars.

“The success of the enterprise being abundantly assured, the Society of American Engineers hereby declares that it does heartily approve of and endorse this as a National and International Exposition. The Society declares in favor of participation in said Exposition. The Society desires to go upon record as expressing the hope that a meeting of this body may be held in St. Louis during the progress of the exposition.”

I presume the gentleman that handed that to the Secretary is here.

Mr. OWEN.—Mr. President, I move that it be referred to the Board of Direction.

The PRESIDENT.—I would call attention, before voting on that, to the fact, as I understand from what the Secretary read, mention is made of a society of which I have no knowledge. It was not this Society. In the last paragraph. If that is to be considered as the

Resolution
as to 1908
Convention
(continued).

expression of an opinion on the part of the American Society of Civil Engineers, that Society ought to be properly designated in it.

The SECRETARY.—You are quite correct, Mr. President. It is evidently a slip of the typewriter. In the first paragraph it is not so called.

(The motion was carried.)

Announce-
ments.

The PRESIDENT.—Before adjourning, if there is no other business, I would like to say that a meeting of the Board of Direction will be held this evening immediately after the close of Mr. McCulloh's address.

The SECRETARY.—Mr. President, I have been asked by the secretary of the Nominating Committee to state that there will be a meeting of that committee held in this house in the room where the badges have been distributed this evening at eight o'clock, and to request that all members of the committee be on hand at that time, as they hope to get through with their business at one session.

Mr. FITZGERALD.—If not out of order, I should like to ask if the time has not been stated for that excursion in the harbor to-morrow morning. I think a number do not understand that the boat is to leave at half-past nine, and the exact time we leave here ought to be understood, I think. We shall not get together again until to-morrow, and I think that ought to be definitely understood and stated what time the boat leaves on the excursion in the harbor.

Major SYMONS.—Mr. President, we will leave, I think we better say, at 10 o'clock.

The SECRETARY.—To-morrow morning?

Major SYMONS.—I was going to ask you to announce that the boat will leave every morning that the Society is here, at 10 o'clock. We will take as many as go to-morrow morning, and those that cannot go to-morrow morning, the next morning; and those that cannot go then, the next morning, or any other morning. Leave the foot of Main Street, Buffalo, at 10 o'clock.

Mr. FITZGERALD.—How long a time?

Major SYMONS.—It will take about an hour or an hour and a half.

Mr. FITZGERALD.—From here?

Major SYMONS.—Yes, from here.

Mr. FITZGERALD.—To get there?

Major SYMONS.—Yes.

The SECRETARY.—In order that it shall not be forgotten, I want to call the attention of members to the fact that to-morrow morning we hold the last meeting of this Convention at 10 o'clock. Therefore, I hope that those who go on the excursion will go the next day, or the next. (Laughter.)

The PRESIDENT.—A meeting for the discussion of professional subjects will be held in this place to-morrow morning at 10 o'clock, and

those who are interested in professional subjects better postpone their expedition until the next day.

The SECRETARY.—Mr. President, I have one announcement to make. It is the death of Thomas Curtis Clarke, Past-President of the Society, who was elected a Member March 18th, 1868. He was elected a Fellow May 20th, 1872, and served as President of the Society from January, 1896, to January, 1897.

I also have to announce that the following Committee has been appointed to recommend the award of prizes for the year ending with the publications of June, 1901:

Charles McMillan, O. H. Ernst and Edward Flad.

Mr. President, there is one other thing. I asked Mr. McCulloh, of the Local Committee, if he would not be present at this meeting and say a few words as to what there was to be seen in this immediate vicinity and as to how the members more especially interested in the various works going on here might get to them. Mr. McCulloh is here now.

WALTER McCULLOH, M. Am. Soc. C. E.—Mr. President, Mr. Hunt requested me to just point out the objects in our city which are of professional interest. First and foremost I think is the Power Station of the Niagara Falls Power Company, to which the Society has been invited by a representative of that company, the letter having been read at the opening of the meeting. The first power house is now completed, has installed the ten dynamos of 5 000 H.-P. units each, and is in full working order. Then there is also their transmission line to Buffalo, their transformer station which transforms the current from the original dynamo current to the transmission voltage.

Engineering
Works at
Niagara Falls.

Next in importance is the construction of the new wheel-pit, which is a duplicate of the first one, with the exception that it is one unit larger. That wheel-pit has been under construction for the last twenty months, and is nearing completion. It is adjoining the first power house, being on the east side of the canal. Mr. Brackenridge, the engineer of the Niagara Falls Power Company, was unable to be here to-day, and he asked me to say that arrangements would be made so that all the members who might come to visit the power station would be properly taken care of and shown through. He advised that we should not come in too large bodies, because it was difficult to handle a large body, and also, because of the large amount of current that is around there, unless people are watched and will follow their leader properly, there is chance for getting into trouble. I do not think engineers would be very apt to get into that trouble, though sometimes their guests might not realize the danger that there is about there; but everyone will be made welcome. At the construction of the wheel-pit, of which I have charge for the constructing company, we would be glad to see you in the same way. Just between the hours

Engineering
Works at
Niagara Falls
(continued).

of 12 and 1 we do our blasting, and at that time it would not be convenient to entertain any of the guests. (Laughter.) And I think it might not perhaps be quite so interesting.

Next in importance is the plant of the Niagara Falls Hydraulic Power and Manufacturing Company, which is known as the Lower Power Station, here at the brow of the bank. They have made enlargements of their plant which are very interesting indeed.

Any one interested in modern mill construction, or factory construction, might visit the new plant which has come to our city, known locally as the Perkey Plant, which is the factory of the Natural Food Company, on Buffalo Avenue, about two blocks from here, one of the largest factories in the city.

Next in importance is the Goat Island Bridge, which is being built of concrete-steel construction. That is right behind the hotel, and no doubt will be of great interest to the members of the Society.

That, I think, is all that is now under construction, or works of importance, that have come into existence since the last visit of the Society here. (Applause.)

Adjourned.

The Secretary regrets to state that the following cable message was received too late to be presented to the meeting, and is printed here for the information of members.

“ June 25th, 1901.

“ CHAS. WARREN HUNT,

“ *Secretary, American Society of Civil Engineers,*

“ *International Hotel, Niagara Falls, N. Y.*

“ *Greetings from the Antipodes to my Colleagues and their families, and best wishes for a successful Convention.*

“ E. L. CORTHELL.”

THE ATTENDANCE AT THE THIRTY-THIRD ANNUAL CONVENTION.

The following 317 Members were in attendance:

Abbott, A. V.	Chicago, Ill.	Carter, William J.	Cleveland, Ohio
Allen, C. Frank.	Boston, Mass.	Chase, F. L.	New York City
Allen, Henry C.	Syracuse, N. Y.	Chase, R. D.	New York City
Archbald, James.	Scranton, Pa.	Chester, J. N.	Pittsburg, Pa.
Aus, Gunwald.	New York City	Childs, O. W.	St. Louis, Mo.
Averill, F. L.	Washington, D. C.	Chittenden, Samuel H.,	
		East River, Conn.	
Bacon, John W.	Danbury, Conn.	Clark, L. V.	Philadelphia, Pa.
Baldwin, Fred H.	Bayonne, N. J.	Clarkson, Robt. C.	Philadelphia, Pa.
Baldwin, William J.	New York City	Cleverdon, H. L.	Lansing, Mich.
Bardol, F. V. E.	Buffalo, N. Y.	Codwise, Edward B.	Kingston, N. Y.
Barnsley, George T.	Oakmont, Pa.	Cohen, Fred W.	Harrisburg, Pa.
Bates, Onward.	Chicago, Ill.	Collier, B. C.	New York City
Bauer, J. L.	New York City	Condron, T. L.	Chicago, Ill.
Belden, Edgar T.	New York City	Connor, E. H.	Leavenworth, Kans.
Bensel, J. A.	New York City	Cook, John H.	Paterson, N. J.
Benzenberg, G. H.	Milwaukee, Wis.	Cornell, Douglas.	Buffalo, N. Y.
Binion, J.	New York City	Crandall, C. L.	Ithaca, N. Y.
Bissell, H.	Medford, Mass.	Crane, A. S.	Sault Ste. Marie, Ont.
Bond, Edward A.	Albany, N. Y.	Crawford, William.	Ottawa, Ont.
Bonzano, A.	Philadelphia, Pa.	Croes, J. James R.	New York City
Brackenridge, W. A.,		Crowell, Foster.	New York City
Niagara Falls, N. Y.			
Brackett, Dexter.	Boston, Mass.	Dalrymple, F. W.	Jamestown, N. Y.
Bradley, Charles W.	Buffalo, N. Y.	Davis, Charles.	Allegheny, Pa.
Braine, L. F.	New York City	Davison, Geo. S.	Pittsburg, Pa.
Breithaupt, W. H.	Berlin, Ont.	Dean, Luther.	Taunton, Mass.
Brendlinger, P. F.	Narbeth, Pa.	Deyo, S. L. F.	New York City
Briggs, Josiah A.	New York City	Diehl, George C.	Buffalo, N. Y.
Brinckerhoff, H. W.	New York City	Douglas, Benjamin.	Detroit, Mich.
Brooks, Fred.	Boston, Mass.	Douglass, A. C.	Niagara Falls, N. Y.
Brown, W. P.	Cleveland, Ohio	Dunham, H. F.	New York City
Brunner, John.	Pittsburg, Pa.		
Bryson, Andrew.	Reading, Pa.	Edwards, N. M.	Appleton, Wis.
Buck, L. L.	New York City	Ellis, G. E.	Troy, N. Y.
Buck, R. S.	New York City	Ellis, John W.	Woonsocket, R. I.
Budge, Enrique.	Santiago, Chile	Engle, Robert L.	Cincinnati, Ohio
Burns, E. C.	Jamestown, N. Y.		
Burrows, George L.	Saginaw, Mich.	Fenkell, Geo. H.	Detroit, Mich.
Bush, Edward W.	Hartford, Conn.	Fickes, E. S.	Pittsburg, Pa.
		Fisher, E. A.	Rochester, N. Y.
		FitzGerald, Desmond.	Boston, Mass.
		FitzGerald, J. Leland	
		Schenectady, N. Y.	
Carr, Albert.	New York City		
Carll, David S.	Washington, D. C.		

- Flad, Edw. St. Louis, Mo.
 Flynn, Benj. H. Columbus, Ohio
 Ford, William H. New York City
 Foyé, Andrew Ernest. New York City
 Furber, Wm. Copeland,
 Philadelphia, Pa.
 Francis, Charles. Davenport, Iowa
 Fritz, J. Bethlehem, Pa.
 Fuertes, E. A. Ithaca, N. Y.
 Fuertes, J. H. New York City
 Fuller, George W. New York City

 Garrett, J. T. St. Louis, Mo.
 Gartensteig, Chas. New York City
 Gatchell, George S. Buffalo, N. Y.
 Gifford, George E. New York City
 Gillespie, R. H. New York City
 Goad, Charles E. Toronto, Ont.
 Goodell, John M. New York City
 Goodnough, X. H. Boston, Mass.
 Green, Bernard R. Washington, D. C.
 Green, Bernard L. Cleveland, Ohio
 Greene, Charles E. Ann Arbor, Mich.
 Greene, George S., Jr. New York City
 Griggs, Julian. Columbus, Ohio
 Guthrie, E. B. Buffalo, N. Y.

 Hagar, Edward M. Chicago, Ill.
 Haines, Caspar Wistar,
 Philadelphia, Pa.
 Haines, H. S. New York City
 Hanna, John V. Kansas City, Mo.
 Hardee, W. J. New Orleans, La.
 Harlow, James H. Pittsburg, Pa.
 Harris, C. M. Pittsburg, Pa.
 Harrison, E. W. Jersey City, N. J.
 Hartnaff, Wm. G. Philadelphia, Pa.
 Haskell, Eugene E. Detroit, Mich.
 Haskins, Wm. J. New York City
 Hatton, T. Chalkley,
 Wilmington, Del.
 Haven, W. A. Buffalo, N. Y.
 Hawley, George P.,
 Shawinigan Falls, Que.
 Hayes, S. W. Buffalo, N. Y.
 Hayford, J. F. Washington, D. C.
 Hazard, Schnyler. New York City
 Hazen, Allen. New York City
 Hemming, D. W. New York City
 Hering, Rudolph. New York City

 Herschel, Clemens ... New York City
 Hider, Arthur. Greenville, Miss.
 Hinds, Frank A. Watertown, N. Y.
 Hoag, S. W., Jr. New York City
 Hodgdon, Frank W. Boston, Mass.
 Hogue, C. J. Little Rock, Ark.
 Hopkins, C. C. Rome, N. Y.
 Horton, Horace E. Chicago, Ill.
 Hotchkiss, C. W. Chicago, Ill.
 Hubbell, C. W. Detroit, Mich.
 Hughes, W. M. Chicago, Ill.
 Humphrey, Richard L.,
 Philadelphia, Pa.
 Humphreys, David C. Lexington, Va.
 Hunt, C. B. Washington, D. C.
 Hunt, Charles Warren. New York City
 Hunt, Robert W. Chicago, Ill.
 Hutchings, W. E. Louisville, Ky.
 Hutton, Wm. B. New York City

 Irwin, James C. Albany, N. Y.

 Jacoby, H. S. Ithaca, N. Y.
 Johnson, A. L. St. Louis, Mo.
 Johnson, Lewis E. Steelton, Pa.
 Johnson, Wallace C.,
 Niagara Falls, N. Y.
 Judson, W. V. Montgomery, Ala.

 Karner, W. J. Chicago, Ill.
 Keith, Herbert C. New Haven, Conn.
 Kelley, W. D. New York City
 Kielland, S. M. Buffalo, N. Y.
 King, C. C. West New Brighton, N. Y.
 King, Paul S. New York City
 Kingsley, M. W. Cleveland, Ohio
 Knap, Joseph M. New York City
 Knapp, L. H. Buffalo, N. Y.
 Knowles, Morris ... Philadelphia, Pa.
 Kuichling, Emil ... Rochester, N. Y.

 Laub, Hermann. Pittsburg, Pa.
 Lawlor, F. D. H. Port Colborne, Ont.
 Lea, Samuel H. Easton, Pa.
 Leisen, Theodore A. Wilmington, Del.
 Lewis, Myron H.,
 Croton Landing, N. Y.
 Lewis, N. P. Brooklyn, N. Y.
 Lindenthal, G. New York City
 Low, Emile. Buffalo, N. Y.
 Lynch, Tillman D. East Pittsburg, Pa.

- McCool, D. Newaygo, Mich.
 McCulloh, Walter. Niagara Falls, N. Y.
 Macdonald, Charles. New York City
 MacGregor, R. A. New York City
 McHenry, E. H. St. Paul, Minn.
 McKim, Alex. Rice. New York City
 MacLennan, John D. Cleveland, Ohio
 McLain, L. R. St. Augustine, Fla.
 McMinn, T. J. New York City
 Maignen, J. P. A. Philadelphia, Pa.
 Manley, Henry Boston, Mass.
 Marindin, Henry L. Washington, D. C.
 Marple, William M. Scranton, Pa.
 Matcham, Charles A. Allentown, Pa.
 Maury, Dabney H., Jr. Peoria, Ill.
 Mayer, Joseph New York City
 Melvin, David N. Linoleumville, N. Y.
 Mercer, Charles H. Steelton, Pa.
 Merriman, Mansfield,
 South Bethlehem, Pa.
 Meyer, Henry C., Jr. New York City
 Millard, Curtiss. Springfield, Ill.
 Miller, Hiram Allen. Clinton, Mass.
 Miller, Rudolph P. New York City
 Miner, C. A. Washington, D. C.
 Modjeski, Ralph Chicago, Ill.
 Molitor, F. A. Little Rock, Ark.
 Montfort, R. Louisville, Ky.
 Moore, Charles H. New York City
 Moore, Robert. St. Louis, Mo.
 Mordecai, Aug. Cleveland, Ohio
 Morris, H. G. Philadelphia, Pa.
 Morse, Charles M. Buffalo, N. Y.
 Moses, John C. Cambridge, Mass.
 Murphy, E. C. Ithaca, N. Y.
 Myers, C. H. New York City.

 Nagle, J. C. College Station, Tex.
 Neumeyer, R. E. Bethlehem, Pa.
 Nichols, O. F. Brooklyn, N. Y.
 Nicholson, Geo. B. Covington, Ky.
 North, Edward P. New York City
 Noyes, H. L. Niagara Falls, N. Y.

 Ockerson, J. A. St. Louis, Mo.
 Odell, F. S. Port Chester, N. Y.
 Olds, Clark Erie, Pa.
 Osborn, Frank C. Cleveland, Ohio
 Ostrander, J. E. Amherst, Mass.
 Owen, James Newark, N. J.

 Packard, R. G. New York City
 Pardee, James T. Cleveland, Ohio
 Parker, A. McO. New York City
 Parker, A. W. Brooklyn, N. Y.
 Parker, C. J. Watertown, N. Y.
 Parker, William Boston, Mass.
 Parmley, W. C. Cleveland, Ohio
 Pegram, Geo. H. New York City
 Phillips, A. E. Washington, D. C.
 Phillips, Hiram St. Louis, Mo.
 Pierce, Wm. T. Boston, Mass.
 Polk, Wm. Anderson. New York City
 Poetsch, Charles J. Milwaukee, Wis.
 Porter, J. M. Easton, Pa.
 Pratt, William Arthur
 Philadelphia, Pa.
 Price, P. W. Oakmont, Pa.

 Quintus, J. C. Buffalo, N. Y.

 Randolph, L. S. Blacksburg, Va.
 Renshaw, A. H. Troy, N. Y.
 Reynolds, J. O. New York City
 Ricker, George A. Buffalo, N. Y.
 Ricketts, Palmer C. Troy, N. Y.
 Roberts, William. Waltham, Mass.
 Robinson, A. W. Montreal, Que.
 Ross, D. W. Boise, Idaho
 Russell, S. B. St. Louis, Mo.
 Ryder, Ely M. T. New Haven, Conn.

 Schneider, C. C. New York City
 Seaman, Henry B. New York City
 See, Horace. New York City
 Seddon, J. A. Chicago, Ill.
 Shryock, J. G. Philadelphia, Pa.
 Slocum, Charles M. Springfield, Mass.
 Smith, J. Waldo Paterson, N. J.
 Snow, J. P. Boston, Mass.
 Snyder, Geo. D. Williamsport, Pa.
 Soper, G. A. New York City
 Spencer, John C. New York City
 Spooner, Allen N. New York City
 Smith, Oberlin. Bridgeton, N. J.
 Stauffer, D. McN. New York City
 Stearns, Frederic P. Boston, Mass.
 Stevens, F. S. Reading, Pa.
 Strickler, G. B. Clinton, Iowa
 Strobel, Charles L. Chicago, Ill.

Strong, M. R.....	New York City	Wadsworth, G. B....	New York City
Swain, G. F.....	Boston, Mass.	Wagner, Joseph C..	Philadelphia, Pa.
Symons, Thomas W....	Buffalo, N.Y.	Walker, J. W.....	Pittsburg, Pa.
		Wallace, J. F.....	Chicago, Ill.
Talbot, A. N.....	Champaign, Ill.	Wallace, Joseph H. .	New York City
Taussig, H. P.....	St. Louis, Mo.	Warder, J. H.....	Chicago, Ill.
Thacher, Edwin.....	New York City	Wason, Leonard C..	Brookline, Mass.
Thackray, George E.	Jonestown, Pa.	Watkins, Fred. W.	White Plains, N.Y.
Thomas, Geo. E.....	Chicago, Ill.	Watson, William.....	Boston, Mass.
Thomson, John.....	New York City	Webster, William R.	Philadelphia, Pa.
Thomson, T. Kennard.	New York City	Wegmann, E.....	Katonah, N. Y.
Thorn, Alfred W.....	Buffalo, N. Y.	Wells, Clinton G....	Baltimore, Md.
Throop, A. T.....	Niagara Falls, N. Y.	Whipple, G. O.....	Brooklyn, N. Y.
Tingley, G. C.....	Providence, R. I.	White, T. S.....	Beaver Falls, Pa.
Tinkham, S. E.....	Boston, Mass.	Whitted, L. R.....	Norfolk, Va.
Toltz, Max.....	St. Paul, Minn.	Whittemore, W. F....	Hoboken, N.J.
Tomkins, Calvin.....	New York City	Wiley, W. H.....	New York City
Touceda, Enrique.....	Albany, N. Y.	Wilgus, W. J.....	New York City
Towle, Stevenson....	New York City	Williams, Gardner S..	Ithaca, N. Y.
Trautwine, John C., Jr.,		Wilkins, W. G.....	Pittsburg, Pa.
	Philadelphia, Pa.	Wilson, H. M....	Washington, D. C.
Triest, W. G.....	New York City	Wimmer, Sebastian...	St. Mary's, Pa.
Turner, E. K.....	Boston, Mass.	Wisner, Geo. Y.	Detroit, Mich.
Tuska, G. R.....	New York City	Wölfel, Paul L.....	Pencoyd, Pa.
		Wood, H. B.....	Boston, Mass.
Van Cleve, A. Howell,		Woods, H. D....	West Newton, Mass.
	Niagara Falls, N. Y.	Worcester, J. R.....	Boston, Mass.
Van der Hoek, J.....	Buffalo, N. Y.	Wulff, Adolph G....	Cincinnati, Ohio
Van Winkle, Edgar B.	New York City		
Vaughan, George W.	Jersey Shore, Pa.	Zeller, A. H.....	St. Louis, Mo.
Vredenburg, Watson, Jr.,		Zollinger, L. R.....	Philadelphia, Pa.
	New York City	Zook, M. A.....	Louisville, Ky.

The total registered attendance at the Convention was as follows:

Members of the Society in all grades.....	317
Guests, including ladies.....	311
Total.....	628

ANNOUNCEMENTS.

The House of the Society is open from 9 A. M. to 10 P. M. every day, except Sundays, Fourth of July, Thanksgiving Day and Christmas Day.

MEETINGS.

Wednesday, September 4th, 1901.—8.30 P. M.—A business meeting will be held, at which ballots for membership will be canvassed, and a paper, entitled "Experiments at Detroit, Mich., on the Effect of Curvature Upon the Flow of Water in Pipes," by Gardner S. Williams, M. Am. Soc. C. E., Clarence W. Hubbell, Assoc. M. Am. Soc. C. E., and George H. Fenkell, Jun. Am. Soc. C. E., will be presented.

This paper was printed in the May number of *Proceedings*.

Wednesday, September 18th, 1901.—8.30 P. M.—At this meeting a paper, by Leonard Metcalf, Assoc. M. Am. Soc. C. E., entitled "The Antecedents of the Septic Tank," will be presented for discussion.

This paper was printed in the May number of *Proceedings*.

Wednesday, October 2d, 1901.—8.30 P. M.—A business meeting will be held, at which ballots for membership will be canvassed, and a paper by Charles G. Darrach, M. Am. Soc. C. E., entitled "Mechanical Installation in the Modern Office Building," will be presented for discussion.

This paper is printed in this number of *Proceedings*.

PROPOSED SPECIAL COMMITTEE ON RAIL SECTIONS.

On July 19th, 1901, a notice relative to the appointment of a Proposed Special Committee on Rail Sections, with ballot for voting, was mailed to each Corporate Member of the Society.

In order that it may be determined whether this committee shall be appointed or not, it is necessary that a total vote of not less than one-third of the Corporate Membership of the Society be received. Up to August 14th, 1901, only 522 votes on the appointment of this committee had been received. One-third of the Corporate Membership is 670; consequently, at least 148 additional votes will have to be sent in before the question can be settled.

If the necessary ballot and envelope have been lost or mislaid, others may be obtained by applying to the Secretary.

COMMITTEE ON PROPOSED AMENDMENT TO THE CONSTITUTION.

In compliance with instructions from the Business Meeting, held on June 25th, 1901, at the Annual Convention, the President has appointed the following Members as a committee to report to the Annual Meeting in January, 1902, on the Advisability of the Proposed Amendment to the Constitution relating to the manner of electing members:

GEORGE S. GREENE, Jr.....	Representing the First District.
EDMUND K. TURNER.....	“ “ Second “
JOHN KENNEDY.....	“ “ Third “
BERNARD R. GREEN.....	“ “ Fourth “
JOHN T. FANNING.....	“ “ Fifth “
BENJAMIN L. CROSBY.....	“ “ Sixth “
GEORGE H. MENDELL.....	“ “ Seventh “

COMMITTEE ON THE ADVISABILITY OF ACTION BEING TAKEN FOR THE PROTECTION OF ENGINEERS AND OF THE PUBLIC FROM INCOMPETENT PRACTITIONERS.

In compliance with instructions from the Business Meeting, held on June 25th, 1901, at the Annual Convention, the President has appointed the following Members as a committee to report at the next Annual Convention on the advisability of action being taken for the protection of engineers and of the public from incompetent practitioners:

SAMUEL WHINERY,

ARTHUR N. TALBOT,
JOHN F. WALLACE,

DESMOND FITZGERALD,
EMIL KUICHLING.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST.

(May 9th to August 10th, 1901.)

NOTE.—This list is published for the purpose of placing before the members of the Society the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS.

In the subjoined list of articles references are given by the number prefixed to each journal in this list.

- (1) *Journal, Assoc. Eng. Soc.*, 267 South Fourth St., Philadelphia, Pa., 30c.
- (2) *Proceedings, Eng. Club of Phila.*, 1122 Girard St., Philadelphia, Pa.
- (3) *Journal, Franklin Inst.*, Philadelphia, Pa., 50c.
- (4) *Journal, Western Soc. of Eng.*, Monadnock Block, Chicago, Ill.
- (5) *Transactions, Can. Soc. C. E.*, Montreal, Que., Can.
- (6) *School of Mines Quarterly*, Columbia Univ., New York City, 50c.
- (7) *Technology Quarterly*, Mass. Inst. Tech., Boston, Mass., 75c.
- (8) *Stevens Institute Indicator*, Stevens Institute, Hoboken, N. J., 50c.
- (9) *Engineering Magazine*, New York City, 30c.
- (10) *Cassier's Magazine*, New York City, 25c.
- (11) *Engineering* (London), W. H. Wiley, New York City, 85c.
- (12) *The Engineer* (London), International News Co., New York City, 35c.
- (13) *Engineering News*, New York City, 15c.
- (14) *The Engineering Record*, New York City, 12c.
- (15) *Railroad Gazette*, New York City, 10c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Street Railway Journal*, New York City, 35c.
- (18) *Railway and Engineering Review*, Chicago, Ill.
- (19) *Scientific American Supplement*, New York City, 10c.
- (20) *Iron Age*, New York City, 10c.
- (21) *Railway Engineer*, London, England.
- (22) *Iron and Coal Trades Review*, London, England.
- (23) *Bulletin, American Iron and Steel Assoc.*, Philadelphia, Pa.
- (24) *American Gaslight Journal*, New York City, 10c.
- (25) *American Engineer*, New York City, 20c.
- (26) *Electrical Review*, London, England.
- (27) *Electrical World and Electrical Engineer*, New York City, 10c.
- (28) *Journal, New England Water-Works Assoc.*, Boston, 75c.
- (29) *Journal, Society of Arts*, London, England.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium.
- (31) *Annales de l' Assoc. des Ing. Sortis des Ecole Spéciales de Gand*, Brussels, Belgium.
- (32) *Memoires et Compte Rendu des Travaux*, Soc. Ing. Civ. de France, Paris, France.
- (33) *Le Génie Civil*, Paris, France.
- (34) *Portefeuille Économique des Machines*, Paris, France.
- (35) *Nouvelles Annales de la Construction*, Paris, France.
- (36) *La Revue Technique*, Paris, France.
- (37) *Revue de Mécanique*, Paris, France.
- (38) *Revue Générale des Chemins de Fer et des Tramways*, Paris, France.
- (39) *Railway Master Mechanic*, Chicago, Ill.
- (40) *Railway Age*, Chicago, Ill., 10c.
- (41) *Modern Machinery*, Chicago, Ill., 10c.
- (42) *Transactions, Am. Inst. Elec. Eng.*, New York City, 50c.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (44) *Journal, Military Service Institution*, Governor's Island, New York Harbor, 75c.
- (45) *Mines and Minerals*, Scranton, Pa., 20c.
- (46) *Scientific American*, New York City, 10c.
- (47) *Mechanical Engineer*, Manchester, England.
- (48) *Proceedings, Eng. Soc. W. Pa.*, 410 Penn Ave., Pittsburg, Pa., 50c.
- (49) *Transactions, Mining Institute of Scotland*, London and Newcastle-upon-Tyne.
- (50) *Municipal Engineering*, Indianapolis, Ind., 25c.
- (51) *Proceedings, Western Railway Club*, 225 Dearborn St., Chicago, Ill., 25c.
- (52) *American Manufacturer and Iron World*, 59 Ninth St., Pittsburg, Pa.
- (53) *Minutes of Proceedings, Inst. C. E.*, London, England.
- (54) *Power*, New York City, 10c.

LIST OF ARTICLES.

Bridge.

- A Stiffened Suspension Bridge on a Steep Incline at the Westport-Cardiff Coal Company's Mine, New Zealand.* Thomas Harold Rawson, M. Inst. C. E. and George Herbert Broome, Assoc. M. Inst. C. E. (63) Vol. cxliii, Pt. 1.
- Piers of Midland Railway Bridge, Shubenacadie River, South Maitland, Nova Scotia.* Geo. E. Thomas. (4) Apr.
- The Substructure of Glasgow Bridge over the Missouri River.* H. P. Boardman. (4) Apr.
- Which is the Best Site for a Hudson River Bridge at New York? (15) May 17.
- Turntable and Operating Mechanism of a 380-Foot Swing Bridge.* (14) May 18.
- Highway Bridge of 406-Ft. Span, Hamilton, O.* (13) May 23.
- Replacing a Passaic River Drawbridge. (14) May 25.
- Standard Transfer Bridge for Car Floats—New York Central & Hudson River Railroad.* (15) May 31.
- A Long Span Bascule Bridge over the Chicago River.* (15) June 7.
- An Enclosed Plate Girder Park Bridge.* (14) June 1.
- The Northampton Concrete Bridge, Central Railroad of New Jersey.* (14) June 8.
- Swing Bridge at Middletown, Conn.* H. G. Tyrrell. (18) June 8.
- Composite Timber Columns. Halbert Powers Gillette. (13) June 13.
- The International Bridge, Buffalo.* (14) June 15.
- Floor System of the New East River Bridge.* (46) June 15.
- Substructure for the Fourth East River Bridge, New York City.* (13) June 20.
- Des Moines River Viaduct, Chicago & Northwestern Ry.* (13) June 27.
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- The Janesville Bridge.* (14) July 6.
- Construction of the Cambridge Bridge Piers. (14) July 6.
- The Boone Viaduct.* (14) July 13.
- Concrete-Steel Bridge and Culvert Construction on the Illinois Central R. R.* (13) July 18.
- Notes on Specifications for Bridge and Structural Steel. P. S. Hildreth. (15) July 19.
- The Hay Steel Process and the First Steel Bridge in America. (13) July 25.
- The Proposed Sydney Harbor Bridge, Sydney, New South Wales. (13) July 25.
- Three-Hinged Concrete Arch Highway Bridge over the Main at Miltenberg, Germany.* (13) July 25.
- The Longest Span Bascule Bridge Ever Built.* (40) July 26.
- The Quebec Bridge Piers.* (14) July 27.
- Concrete-Steel Bridges in Porto Rico.* Edwin Thacher M. Am. Soc. C. E. (13) Aug. 1; (14) Aug. 3.
- The Brooklyn Bridge Accident.* (20) Aug. 1.
- Broken Suspension Rods on Brooklyn Bridge.* (15) Aug. 2.
- Whether to Strengthen the Old Bridge or Renew It? (15) Aug. 2.
- New Overhead Bridge, Willett Street, Cleveland, O. D. M. Taylor. (18) Aug. 3.
- The Failure of the Brooklyn Bridge. (46) Aug. 3.
- Three Great Suspension Bridges Across the East River, New York.* (46) Aug. 3.
- Riveted Lattice Truss Drawbridge; Chicago & Northwestern Ry.* (13) Aug. 8.
- The Accident to the Brooklyn Bridge. Wilhelm Hildenbrand. (13) Aug. 8.
- On the Effects of Repeated Strains in Structures, as Exemplified in the Brooklyn Bridge Fractures. James E. Howard. (20) Aug. 8.
- Rebuilding Pier No. 4 of the Aqueduct Bridge, Georgetown, D. C.* (14) Aug. 10.
- Les Ponts Métalliques à Arcades: Système Vierendeel.* A. Morizot. (35) Serial beginning Mar., ending Apr.
- Nouveau Pont sur le Rhin, à Worms.* M. Seurat. (33) May 11.
- Chute par Gauchissement d'un Pont Démontable. S. Périsse. (32) June.
- Cintres Métalliques Mobiles Employés en Bavière.* René Philippe. (35) July.
- Pont en Béton de las Segadas, à Articulaciones.* J. Eugenio Ribera. (36) July 10.

Electrical.

- The Telautograph. Philip Cardew. (63) Vol. cxliii, Pt. 1.
- Wireless Telegraphy.* S. M. Kintner. (58) Mar.
- Rotary Transformers: Their History, Theory and Characteristics.* George W. Colles. (3) Serial beginning Mar., ending July.
- The Distribution and Conversion of Received Currents.* Henry Gordon Stott. (42) Apr.
- The Transformer for Measuring Large Direct Currents.* Harris J. Ryan. (42) Apr.
- Electricity in Mountain Mines. (42) Apr.
- Installation, Operation and Economy of Storage Batteries.* Ernest Lunn. (1) Apr.
- Experiments with Commercial "Dry Cells" for Secondary Standards of E. M. F. Henry St. John Hyde. (6) Apr.
- The New Edison Storage Battery. Arthur E. Kennelly. (42) May.
- The Relation between Voltage and Speed in a Shunt Dynamo. H. B. Poynder and H. E. Wimperis. (11) May 3.
- Electrical Locomotives.* (26) May 3.
- Driving by Electricity. (26) May 3.
- Notes on Meter Testing. Arthur T. Smith. (26) May 3.
- Modern Telephone Engineering.* Kempster B. Miller. (27) Serial beginning May 4, ending May 11.

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- The Commercial Variable Speed Motor Driven Lathe.* (20) May 9.
 The Kingsland Mechanical Surface Contact System.* (26) May 10; (47) May 18.
 On Test-Room Methods of Alternate Current Measurement. Albert Campbell. (26) Serial beginning May 10, ending May 17.
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 Heating of Electrical Machinery under Two Regularly Alternating Conditions of Load. Edwin Rust Douglas. (27) May 11.
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 Syntonic Wireless Telegraphy.* Guglielmo Marconi. (29) May 17; (47) Serial beginning June 1, ending June 8.
 The Edison System in Boston—Its Development and Present Status.* E. S. Mansfield. (27) May 18.
 A Simple Diagram Showing the Regulation of a Transmission System for any Load and any Power Factor. F. G. Baum. (27) May 18.
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 Note on a Humming Telephone.* F. Gill. (26) May 31.
 Barnes Electricity Works.* (26) May 31.
 Capacity Currents as Influenced by Frequency.* T. Mather. (26) May 31.
 The Storage of Electricity.* (12) Serial beginning May 31, ending June 7.
 A Watt-Hour Meter.* Frank Holden. (26) Serial beginning May 31, ending June 7.
 Notes on the Theory of Synchronous Motors and of Alternators in Parallel. Alexander Russell. (26) Serial beginning May 31, ending July 19.
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 Chaudière Falls Power Transmission Plant.* E. Girouard. (27) June 15.
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 On Polyphase Generating and Sub-Station Plant for Electric Traction. H. S. Meyer. (26) July 5.
 Tyneside Electrical Power Distribution Plant.* (27) July 6.
 Direct-Current Engineering Practice in Germany. Charles Brandeis. (27) July 6.
 The Efficiency Curve of a Shunt Motor and Its Relation to Operating Characteristics and the Cost of Operation. (27) July 6.
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 Boiler Tests with Illinois Coals. L. P. Breckenridge. (4) June.
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- The Oil and Gas Engine.* A. H. Goldingham. (41) June.
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 Superheated Steam. Ernest H. Foster. (10) June.
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 Tests of Non-Conductive Coverings for Steam Pipes. Prof. D. S. Jacobus. (6) July.
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 Steam Engineering in Paper and Pulp Mills. William D. Ennis. (9) July.
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- Central Heating Plant, Ellis Island, N. Y.** (14) Serial beginning July 27, ending Aug. 10.
- Sewerage and Sewage Disposal.** Solon C. Smith. (60) Aug.
- Proposed Garbage Furnaces with Heat Utilization at Buenos Ayres, Argentine Republic.** (13) Aug. 8.
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- L'Épuration Bactérienne des Eaux d'Égout.** G. Richou. (33) June 15.

Structural.

- The High Office Buildings of New York.*** Reginald Pelham Bolton, Assoc. M. Inst. C. E. (63) Vol. cxliii, Pt. i.
- Concrete Construction.*** C. R. Neher. (1) Apr.
- Factors Which Cause the Decay of Wood.*** Hermann von Schrenk. (4) Apr.
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- The Portland Cement Industry in New York.** Edwin C. Eckel, Assoc. Am. Soc. C. E. (13) May 16.
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*Illustrated.

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- The Chicago Coliseum Roof.* (14) June 29.
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 Note sur l'Essai des Métaux à la Flexion par Choc de Barreaux Entaillés.* G. Charpy. (32) June.
 Considérations Générales sur les Ouvrages en Ciment Armé. (36) June 10.

Topographical.

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 A Topographical Survey of the Reservoir System at the Headwaters of the Mississippi River. (14) July 27.

Water Supply.

- The Miners' Inch and the Discharge of Water Through Various Orifices Under Low Heads. Thos. Drummond, A. M. Can. Soc. C. E. (5) Vol. xiv, Pt. II.
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- The Albany Filtration Plant and Some of the Results Obtained. (14) June 22.
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- Les Turbines Hydrauliques à l'Exposition de 1900.* Gérard Lavergne. (33) Serial beginning Apr. 20, ending Apr. 27.
- La Nouvelle Fosse aux Turbines de la Niagara Falls Power Co.* (33) May 11.
- Étude Technique et Pratique sur le "Sidero-Ciment" appliqué aux Conduites d'Eau, Réservoirs, Égouts, etc.* (35) Serial beginning May, ending June.
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- Utilisation des Chutes d'Eau à la Production d'Énergie Électrique. René Philippe. (34) July.

Waterways.

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- Notes on the Height of Waves at Peterhead, N. B. William Shield, M. Inst. C. E. (63) Vol. cxliii, Pt. I.
- Construction of Concrete Masonry of a Canal Lock on the Eastern Section of the Illinois & Mississippi Canal.* Jas. C. Long. (4) Apr.
- The Soulanges Canal Works, Canada.* C. R. Couitée, Assoc. M. Can. Soc. C. E. (13) Serial beginning Apr. 18, ending July 11.
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INDUCTION COILS.

How to Make, Use and Repair Them, Including Ruhmkorff, Tesla, and Medical Coils, Roentgen Radiography, Wireless Telegraphy, and Practical Information on Primary and Secondary Battery. By H. S. Norrie (Norman H. Schneider). Second Edition, Revised and Enlarged. Cloth, 7 x 5 ins., 16 + 270 pp., illus. New York, Spon & Chamberlain, 1901. \$1.00.

In this edition the following new matter has been added: Coils for gas and automobile engines; medical coils, concise directions for operation and repairs; new forms of contact breakers, including electrolytic and mechanical; gas-lighting apparatus; primary and secondary batteries. The chapter on X-Ray apparatus has been entirely rewritten, and a chapter on Wireless Telegraphy has been added. The Contents are: Coil Construction; Contact Breakers; Insulations and Cements; Condensers; Experiments; Spectrum Analysis; Currents in Vacuo; Rotating Effects; Gas Lighting; Batteries for Coils; Storage or Secondary Cell; Tesla and Hertz Effects; The "Roentgen" Rays and Radiography; Wireless Telegraphy. There is an index of four pages.

ECONOMICS OF ROAD CONSTRUCTION.

By Halbert Powers Gillette. Cloth, 9 x 6 ins., 41 pp., illus. New York, The Engineering News Publishing Co., 1901. \$1.00.

The Contents are: Historical Review; Earth Roads and Earthwork; Gravel Roads; Macadam Roads; Telford Roads; Summary and Conclusions.

WATER FILTRATION WORKS.

By James H. Fuertes, M. Am. Soc. C. E. Cloth, 7 x 5 ins., 18 + 283 pp., illus. New York, John Wiley & Sons, 1901. \$2.50. (Donated by the Author.)

During the past decade great advances have been made in the development of processes for the purification of polluted waters. It has been the endeavor of the author to describe these processes and the works necessary for carrying them out, with sufficient fullness to indicate the results that may be attained in the matter of water purification, the means of attaining these results, and the elements entering into the design, as well as into the cost, of the necessary works, both as regards construction and operation. The headings of chapters are: Introductory; Intakes, Sedimentation and Settling Basins; The Purification of Water by Slow Sand-Filtration; The Design, Construction and Operation of Slow Sand-Filters; The Purification of Water by Rapid Sand-Filtration; The Construction and Operation of Rapid Sand-Filters; Conclusions; Filtered-Water Reservoirs. There is an index of fifteen pages.

COMMISSION DES MÉTHODES D'ESSAI DES MATÉRIAUX DE CONSTRUCTION.

Deuxième Session. Ministère des Travaux Publics. Paper, 13 x 9 ins., 3 vols., pl., illus. Paris, Imprimerie Nationale, Vve. Ch. Dunod, Éditeur, 1900. 40 francs.

The Contents are: Vol. I, Documents Généraux; Vol. II, Section A (Métaux), Rapports Particuliers; Vol. III, Section B et Sections A et B Réunies (Matériaux de Construction autres que les Métaux et Produits Secondaires des Matériaux de Construction), Rapports Particuliers.

COMMUNICATIONS PRÉSENTÉES DEVANT LE CONGRÈS INTERNATIONAL DES MÉTHODES D'ESSAI DES MATÉRIAUX DE CONSTRUCTION

Tenu à Paris du 9 au 16 Juillet, 1900. Paper, 13 x 9 ins., 2 vols. in 8, pl., illus. Paris, Vve. Ch. Dunod, Éditeur, 1901. 50 francs.

The Contents are: Vol. I, Études Générales; Études sur la Constitution Moléculaire des Corps et leurs Lois de Déformation sous l'Application des Efforts; Historique des Méthodes d'Essai; Laboratoires et Appareils d'Essai. Vol. II, Pt. 1, Métaux; Essais Mécaniques; Étude des Essais de Divers Métaux et de Certaines Pièces Assemblées. Vol. II, Pt. 2, Matériaux autres les Métaux.

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MORRISON, EUGENE TAYLOR, Engr. in Chg. Drafting Room, Penna. Steel Co., Steelton (Res., 1526 North Second St., Harrisburg), Pa.....	Jan. 2, 1901
NOYES, HARRY LINCOLN, Eng., Union Carbide Co., Niagara Falls, N. Y.....	June 5, 1901
O'BRIEN, JOSEPH HENRY, 26 Preston St., Providence, R. I.....	May 1, 1901
POST, WILLIAM SCHUYLER, Supt., Ventura Water, Light and Power Co., Ventura, Cal.	May 1, 1901
ROSEWATER, WILLIAM MARCUS, Chf. Draftsman, The Bucyrus Co., South Milwaukee, Wis.	June 5, 1901
SCHARSCHMIDT, SAMUEL HOWARD, Asst Eng., Northern Ry., Port Limon, Costa Rica	May 1, 1901
THOMSON, ERNEST BURSLEM, U. S. Supt., St. Augustine, Fla.....	June 5, 1901
WALSH, GEORGE SCHERZER, Res. Eng., Salvador Ry. Co., Ltd., San Sal- vador, Salvador	{ Jun. Feb. 2, 1897 Assoc. M. May 1, 1901

ASSOCIATES.

BELDEN, EDGAR TWEEDY, Care, Chas. Warner Co., 80 William St., New York City..	Mar. 5, 1901
ZIPPERLEIN, JOSEPH WILLIAM, Vice-Pres., Wm. G. Hartranft Cement Co., Real Estate Trust Bldg., Philadelphia, Pa.....	June 4, 1901

JUNIORS.

GRAY, JOHN COLIN, 36 Garden Pl., Brooklyn, N. Y.....	June 4, 1901
MACDONALD, ARCHIBALD ANGUS, 32 Liberty St., New York City.....	June 4, 1901

CHANGES OF ADDRESS.

MEMBERS.

AINSWORTH, DANFORTH HURLBERT.....	1240 Tenth St., Des Moines, Iowa.
ANDREWS, DANIEL MARSHALL.....	Lincoln, Ala.
APPLETON, THOMAS.....	Manahawkin, N. J.
ARENTZ, FREDERICK CHRISTIAN HOLBERG.....	Eng., Highway Dept., Western Dist., American Bridge Co., Monadnock Block, Chicago, Ill.
AUCHINCLOSS, WILLIAM S.....	Atlantic Highlands, N. J.
BALLARD, ROBERT.....	26 Mansion House Chambers, Lon- don, E. C., England.
BARR, JACOB NEFF.....	Mech. Supt., B. & O. R. R. Co., Baltimore, Md.
BATES, ONWARD.....	Pres., Bates & Rogers Const. Co., 1203 Manhattan Bldg., Chicago, Ill.
BEAHAN, WILLARD.....	Div. Eng., C. & N.W. Ry., Winona, Minn.
BIDDLE, JOHN.....	Major, Corps of Engrs., U. S. A., Washington, D. C.
BISSELL, FRANK EDWARD.....	First Asst. Eng., L. S. & M. S. Ry., Cleveland, Ohio.
BOND, FREDERICK WINN.....	Chf. Eng., Ft. Smith & Western R. R. Co., Fort Smith, Ark.
BONTECOU, DANIEL.....	508 Heist Bldg., Kansas City, Mo.
CHESTER, JOHN NEEDELS.....	Chf. Eng., American Water- Works & Guarantee Co., 1200 Bank for Savings Bldg., Pitts- burg, Pa.
CRAIG, CHAMBERS MCKIBBIN.....	Hagerstown, Md.
DENNIS, WILLIAM FRANKLIN.....	308 East Clay St., Richmond, Va.
FISK, WALTER LESLIE.....	Major, Corps of Engrs., U. S. A., U. S. Engrs.' Office, 33 Campau Bldg., Detroit, Mich.
FORCE, CYRUS GILDERSLEEVE.....	Flanders, Morris Co., N. J.
FRENCH, JAMES BENTON.....	Bridge Eng., Atlantic Ave. Impvt., Long Island R. R., Temple Bar Bldg., Brooklyn, N. Y.
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FULLER, WILLIAM BARNARD.....	100 William St., New York City.
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GRAFTON, CHARLES EDWIN.....	Care, B. & O. R. R., Akron, Ohio.
GRIMM, CARL ROBERT.....	Gaston Bldg., Dallas, Tex.
HARTS, WILLIAM WRIGHT.....	Capt., Corps of Engrs., U. S. A., Manila, Philippine Islands.
HASIE, MONTAGUE SILVESTER.....	Room 32, Gaston Bldg., Dallas, Tex.
HAZLEHURST, JAMES NIBBET.....	Chf. Eng., Board of Public Works, Mobile, Ala.
HINCKLEY, JOHN FRANKLIN.....	Chf. Eng. of Constr., St. L. & S. F. R. R., Sherman, Tex.
HOAG, SIDNEY WILLETT, JR.....	Asst. Eng., Dept. of Docks and Ferries, 208 West 121st St., New York City.
JAKUES, WILLIAM HENRY.....	Little Boars Head, N. H.
JOHNSON, FRANCIS ROBERT.....	Care, Civil Commr., East London, Cape Colony, South Africa.
KETH, HERBERT CARY.....	Bridge Eng., Mason City & Fort Dodge R. R., Fort Dodge, Iowa.
KONDO, SENTARO.....	Doboku Kantokusho, Tokio, Japan.
LANGE, GUNARDO AUFIN.....	Care, Fr. J. Morison, Casilla de Correo, No. 1098, Buenos Aires, Argentine Republic.
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MERRYMAN, WILLIAM CURTIS.....	Res. Eng., Third Div., R. T. Sub- way Constr. Co., 562 West 149th St., New York City.
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FEW, ARTHUR.....	Brooksville, Fla.

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REED, MELVILLE EMERSON.....	Care, G. N. Ry., Jennings, Mont.
SABIN, ALPHEUS TIMOTHY.....	Chf. Eng., L. & A. R. R., Irvine, Estill Co., Ky.
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SMITH, MILLER ARMSTRONG.....	Care, The Cuba Co., 80 Broadway, New York City.
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THOMAS, GEORGE EDWARD.....	27 East 1st St., Bayonne, N. J.
VAUGHAN, GEORGE WASHINGTON.....	Div. Eng., Penna. Div., N. Y. C. & H. R. R. R., Jersey Shore, Pa.
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ASSOCIATE MEMBERS.

BARNES, WILLIAM THOMAS.....	773 Broadway, South Boston, Mass.
BOGGS, JOHN INNERARITY.....	Old Orchard, St. Louis Co., Mo.
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BOYD, JAMES CHURCHILL.....	Roadmaster, Boston Elev. Ry. Co., Sullivan Sq. Terminal, Charles- town, Mass.
BRACE, JAMES HENRY.....	Care, Michigan Lake Superior Power Co., Sault Ste. Marie, Mich.
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HARRIS, VAN ALEN.....	Asst. Eng., U. S. Eng. Corps, Yauco, Porto Rico.
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HOMAN, WILLIAM MACLEAN.....	Care, D. McCall, 10 Rosslyn Ter- race, Kelvinside, Glasgow, Scot- land.
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LAVIS, FRED.....	320 Hyde Park Ave., Hyde Park, Mass.
LONG, EUGENE McLEAN.....	309 Broadway, New York City.
McCAUSLAND, ELMER JAMES.....	Box 53, Bradford, Ill.
McKEAN, REGINALD.....	Box 68, Sherman, Tex.
McREYNOLDS, ORVAL OMAR.....	Civil and Mining Eng., 709 Equit- able Bldg., Denver, Colo.
MOGENSEN, OLAF EINAR.....	405 Equitable Bldg., St. Louis, Mo.
PHILLIPS, HOWARD CRATHORNE.....	Asst. Supt., Chicago Div., A., T. & S. F. Ry., Fort Madison, Iowa.
REICHMANN, ALBERT FERDINAND.....	1310 Monadnock Bldg., Chicago, Ill.
RUST, HENRY BEDINGER.....	230 Broadway, Pueblo, Colo.
SEUBOT, PAUL ALBERT.....	University Place, Ozone Park, N.Y.
SIMPSON, GEORGE.....	Care, Thompson-Starrett Co., 51 Wall St., New York City.
STICKNEY, GEORGE FETTER	Care, Michigan Lake Superior Power Co., Sault Ste. Marie, Mich.
STRICKLER, GRATZ BROWN.....	Supt. of Constr., U. S. Post Office Bldg., Clinton, Iowa.
WADSWORTH, JOEL EDWARD.....	7 West 22d St., New York City.
WINN, WALTER SCOTT.....	U. S. Asst. Eng., Engrs.' Office, U. S. A., Chattanooga, Tenn.

JUNIORS.

ABBOTT, ARTHUR VAUGHAN.....	817 Plaza, Chicago, Ill.
ALLEN, WALTER HINDS.....	1090 Walnut St., Newton High- lands, Mass.
BARTRAM, GEORGE CORRIE.....	Res. Eng., The Phoenix Bridge Co. 153 Milk St., Boston, Mass.

BASCOM, HARRY FRANKLIN	Lehr & Bascom, 720 Hamilton St., Allentown, Pa.
DIXON, DeFOREST HALSTEAD	2 West Hamilton Pl., Jersey City, N. J.
FARGUSSON, MARK	Care, Holland Torpedo Boat Co., 100 First St., Elizabethport, N. J.
FORD, WILLIAM HAYDEN	Care, C. P. Matlack, 213 East German St., Baltimore, Md.
FULLER, ALMON HOMER	Prof. of Eng., Univ. of Wash., University Sta., Seattle, Wash.
FULLER, CARL HAMILTON	Granada Hotel, Chicago, Ill.
FURMAN, JOB ROCKFIELD	Care, Otis Elevator Co., 71 Broadway, New York City.
GOODRIDGE, JOHN WESLEY	112 St. Marks Ave., Brooklyn, N. Y.
GRIMM, HENRY ENGLAND	Eng. Dep., C. & A. R. R., 212 East Washington St., Bloomington, Ill.
HAIGHT, HORACE DE REMER	Eng., Sun Portland Cement Co., P. O. Box 652, Owen Sound, Ont., Canada.
HARING, ALEXANDER	616 Baker St., Detroit, Mich.
HIGHLEY, LEE	B. & B. Dept., Mo. Pac. Ry., Jefferson City, Mo.
HOW, RICHARD WILLIS	Temple Bar Bldg., Brooklyn, N. Y.
HYDE, WILLIAM HERBERT	Care, W. G. Wilkins, Westinghouse Bldg., Pittsburg, Pa.
LANT, FRANK PARSONS	318 West 135th St., New York City.
McHARG, LESLIE	159 Madison Ave., New York City.
MACY, ELBERT CLYDE	Care, B., N. & O. Ry., Nampa, Idaho.
MERRIMAN, THADDEUS	Care, The Guayaquil & Quito Ry. Co., 33 Wall St., New York City.
MORE, CHARLES CHURCH	Draftsman, Eastern Dist., American Bridge Co., Pencoyd, Pa., 222 Rochelle Ave., Station I, Philadelphia, Pa.
PERRY, GEORGE FRANKLIN	Care, J. G. White Co., Ltd., 22A College Hill, Cannon St., E. C., London, England.
RAMSEY, EDMUND PAYTON	Asst. Eng., Div. 1, Rapid Transit R. R. Comm., 13 Astor Pl., New York City (Res., 11 Willoughby Ave., Brooklyn, N. Y.).
ROCKWELL, JAMES VINCENT	Care, C. & N. W. Ry., Layton Park, Milwaukee, Wis.
SKELLY, JAMES WILLIAM	Care, Asst. Engr.'s office, Mo. Pac. Ry., Sedalia, Mo.
TAYLOR, ALEXANDER JENIFER	906 Adams St., Wilmington, Del.

196 MEMBERSHIP—CHANGES OF ADDRESS—DEATHS.

VAN PELT, SUTTON	Care, U. S. Engr. office, Eutaw, Ala.
WADSWORTH, GEORGE REED	Res. Eng., N. Y. C. & H. R. R. R., Albany, N. Y.

ASSOCIATES.

BOOTH, WILLIAM FERRIS	Cons. Eng., The Transit Contract Co., Cornell Bldg., Scranton, Pa.
DU BARRY, EDMUND LOUIS	Supt., Terminals, N. W. Ry., Norfolk, Va.
HAMLIN, CHARLES EDWARD	Contr. Mgr. for S. E. District, American Bridge Co., Atlanta, Ga.
HUSTON, JAMES ARCHIBALD	Care, American Bridge Co., Empire Bldg., Pittsburg, Pa.
STOWE, CHARLES BROWN	Superior Bldg., Cleveland, Ohio.

FELLOWS.

BLATCHFORD, ELIPHALET W.	70 North Clinton St., Chicago, Ill.
DARWIN, HARRY GILBERT	231 West 69th St., New York City.

DEATHS.

BRADBURY, HENRY ROBERT	Elected Associate July 1, 1881; died July 3, 1901.
CLARKE, THOMAS CURTIS	Elected Member March 18, 1868; Fellow May 20, 1872; died June 15, 1901.
CUNNINGHAM, PAUL DAVIS	Elected Associate Member March 1, 1899; died July 13, 1901.
JOHNSTON, ANDREW LANGSTAFF	Elected Member June 4, 1890; died May 15, 1901.
LEWIS, JAMES FREDERICK	Elected Associate Feb. 6, 1889; died July 23, 1901.
MCAIR, THOMAS SPEER	Elected Member July 2, 1873; died July 25, 1901.
SLOAN, ROBERT IMLAY	Elected Member October 1, 1884; died March 3, 1901.
TOWER, ASHLEY BEMIS	Elected Member October 3, 1894; died July 8, 1901.
WARD, LEBBEUS BALDWIN	Elected Member March 16, 1870; died July 2, 1901.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

INSTITUTED 1852.

PROCEEDINGS.

This Society is not responsible, as a body, for the facts and opinions advanced in any of its publications.

SOCIETY AFFAIRS.

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MINUTES OF MEETINGS.

OF THE SOCIETY.

September 4th, 1901.—The meeting was called to order at 8.40 p. m., President J. James R. Croes in the chair; Charles Warren Hunt, Secretary; and present, also, 74 members and 13 guests.

The minutes of the meeting of June 5th and of the Annual Convention were approved as printed in *Proceedings* for August, 1901.

A paper by Gardner S. Williams, M. Am. Soc. C. E.; Clarence W. Hubbell, Assoc. M. Am. Soc. C. E., and George W. Fenkell, Jun. Am. Soc. C. E., entitled "Experiments at Detroit, Mich., on the Effect of Curvature upon the Flow of Water in Pipes," was presented in abstract by Mr. Williams, and illustrated with the stereopticon.

The paper was discussed by Messrs. Emil Kuichling, Rudolph Hering and William R. Hutton.

The Secretary announced that he had received written discussions on this paper from Messrs. E. C. Murphy, Hiram F. Mills, Irving P.

Church, Charles H. Tutton, J. L. Campbell and Charles W. Sherman. The President ruled that owing to the lateness of the hour these communications should not be presented at this meeting.

Ballots were canvassed, and the following candidates were declared elected:

AS MEMBERS.

ALFRED EDGAR BURTON, Boston, Mass.
EVERETT WILSON LEWIS, Twin Bridges, Mont.
CHARLES HARRY MOORE, New York City.
KYOICHI MURAKAMI, Osaka, Japan.
ASA EMOY PHILLIPS, Washington, D. C.
JOSEPH RIPLEY, Sault Ste. Marie, Mich.
ALBERT LOUIS SCHULTZ, Pittsburg, Pa.
WILLIAM CHARLES SMITH, St. Paul, Minn.
GEORGE DUNCAN SNYDER, Williamsport, Pa.
STEPHEN WESTROPP STACPOOLE, Orizaba, Vera Cruz, Mexico.
HOMER REED STANFORD, San Francisco, Cal.
ROBERT WILLIAM WADDELL, Kansas City, Mo.

AS ASSOCIATE MEMBERS.

HARRY FRANKLIN BASCOM, Allentown, Pa.
GUSTAVE MAURICE BRAUNE, Birmingham, Ala.
WILLIAM TULLY DORRANCE, Rochester, N. Y.
JAMES RUTHERFORD ELLIOTT, Braddock, Pa.
WILLARD E. HERRING, Coalgate, Ind. T.
ARTHUR STANLEY HOBBY, Jr., Santiago, Cuba.
GEORGE GILL HONNESS, Paterson, N. J.
HENRY CYPRIAN HUMPHREY, Syracuse, N. Y.
JOSEPH JACOBS, San Francisco, Cal.
LEWIS JEROME JOHNSON, North Cambridge, Mass.
MILO SMITH KETCHUM, Champaign, Ill.
FRANK BARR KNIGHT, New York City.
RICHARD STANISLAUS McCAFFERY, Medlin, N. C.
WILLIAM MAYO VENABLE, Boston, Mass.
FRANK ELWIN WEYMOUTH, Washington, D. C.

The Secretary announced the election of the following candidates by the Board of Direction on September 3d, 1901:

AS ASSOCIATES.

ALBERT LLOYD COLSTEN, Port Deposit, Md.
RALPH GOODING PACKARD, Jr., New York City.

AS JUNIORS.

JOHN VAN DERVEER BEEKMAN, Jr., Orange, N. J.

JAMES RENWICK DIMOND, New York City.

CHARLES ENZIAN, South Bethlehem, Pa.

ROBERT DWIGGINS MONTEITH HENLEY, Louisville, Ky.

ERLE LEROY VEUVE, Ventura, Cal.

The Secretary announced the death of the following members:

LEBBEUS BALDWIN WARD, elected Member March 16th, 1870; died July 2d, 1901.

HENRY ROBERT BRADBURY, elected Associate July 1st, 1881; died July 3d, 1901.

ASHLEY BEMIS TOWER, elected Member October 3d, 1894; died July 8th, 1901.

PAUL DAVIS CUNNINGHAM, elected Associate Member March 1st, 1899; died July 13th, 1901.

JAMES FREDERICK LEWIS, elected Associate February 6th, 1889; died July 23d, 1901.

THOMAS SPEER MCNAIR, elected Member July 2d, 1873; died July 25th, 1901.

GEORGE AUSTIN QUINLAN, elected Member October 4th, 1893; died August 29th, 1901.

WILLIAM LUDLOW, elected Member July 5th, 1882; died August 30th, 1901.

In reference to the vote on the appointment of the proposed Special Committee on Rail Sections, the Secretary made the following announcement:

Total number of votes received, to date.....	542
One-third of the Corporate Membership at the time of sending out the ballot.....	<u>670</u>
Number of additional votes needed before count can be made.....	128

Adjourned.

The regular meeting, which was to have been held on September 18th, 1901, was postponed until Wednesday, September 25th, 1901, on account of the death of William McKinley, President of the United States.

OF THE BOARD OF DIRECTION.

(Abstract.)

September 3d, 1901, 8.10 P. M.— President Croes in the chair Charles Warren Hunt, Secretary; and present, also, Messrs. Briggs, Hering, Knap, Kuichling, Morison, Noble, O'Rourke, Osborn, Seaman and Whinery.

The Secretary reported that the following members of the Society, all of whom have indicated their willingness to serve, have been appointed at the request of the Verein Deutscher Ingenieur to aid in the preparation of a proposed "Technolexicon," of which Dr. Hubert Jansen is to be the editor: Messrs. Rudolph Hering, Clemens Herschel, Gustav Lindenthal, Henry Goldmark, Joseph Mayer, Emil Kuichling, H. D. Woods, William R. Hutton, C. C. Schneider, G. Bouscaren and O. Chanute.

A committee, consisting of Messrs. Endicott, Noble and Hunt, was appointed to report to the Board on the Time and Place for holding the next Annual Convention, which was referred, by the Annual Convention, to the Board, with power.

It was resolved that hereafter no Certificates of Membership be issued to Juniors.

Applications were considered, and other routine business transacted.

Two candidates for Associate and five for Junior were elected.

Adjourned.

ANNOUNCEMENTS.

The House of the Society is open from 9 A. M. to 10 P. M. every day, except Sundays, Fourth of July, Thanksgiving Day and Christmas Day.

MEETINGS.

Wednesday, October 24, 1901.—8.30 P. M.—A business meeting will be held, at which ballots for membership will be canvassed, and a paper by Charles G. Darrach, M. Am. Soc. C. E., entitled "Mechanical Installation in the Modern Office Building," will be presented for discussion.

This paper was printed in the August number of *Proceedings*.

Wednesday, October 16th, 1901.—8.30 P. M.—At this meeting a paper by Edward C. Murphy, Assoc. M. Am. Soc. C. E., entitled "Current Meter and Weir Discharge Comparisons," will be presented for discussion.

This paper is printed in this number of *Proceedings*.

Wednesday, November 6th, 1901.—8.30 P. M.—A business meeting will be held. Ballots for membership will be canvassed, and a paper by S. D. Rockenbach, Assoc. M. Am. Soc. C. E., entitled "The Water-Works of Guantanamo, Cuba," will be presented for discussion.

This paper is printed in this number of *Proceedings*.

INDEX TO TRANSACTIONS.

An Index, covering the forty-five volumes of *Transactions*, has been issued during the past month to all members of the Society. Copies have been also issued to the libraries of many Engineering Societies, both in this country and abroad. A somewhat limited number of extra copies, in paper covers, is on hand; and the Publication Committee has placed a price of \$2 per copy upon them. This announcement is made on account of inquiries which have been received as to how this Index could be obtained by those not connected with the Society.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST.

(October 10th to November 13th, 1901.)

NOTE.—*This list is published for the purpose of placing before the members of the Society the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.*

LIST OF PUBLICATIONS.

In the subjoined list of articles references are given by the number prefixed to each journal in this list.

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| <p>(1) <i>Journal, Assoc. Eng. Soc.</i>, 257 South Fourth St., Philadelphia, Pa., 80c.</p> <p>(2) <i>Proceedings, Eng. Club of Phila.</i>, 1123 Girard St., Philadelphia, Pa.</p> <p>(3) <i>Journal, Franklin Inst.</i>, Philadelphia, Pa., 50c.</p> <p>(4) <i>Journal, Western Soc. of Eng.</i>, Monadnock Block, Chicago, Ill.</p> <p>(5) <i>Transactions, Can. Soc. C. E.</i>, Montreal, Que., Can.</p> <p>(6) <i>School of Mines Quarterly</i>, Columbia Univ., New York City, 50c.</p> <p>(7) <i>Technology Quarterly</i>, Mass. Inst. Tech., Boston, Mass., 75c.</p> <p>(8) <i>Stevens Institute Indicator</i>, Stevens Institute, Hoboken, N. J., 50c.</p> <p>(9) <i>Engineering Magazine</i>, New York City, 80c.</p> <p>(10) <i>Cassier's Magazine</i>, New York City, 25c.</p> <p>(11) <i>Engineering</i> (London), W. H. Wiley, New York City, 35c.</p> <p>(12) <i>The Engineer</i> (London), International News Co., New York City, 35c.</p> <p>(13) <i>Engineering News</i>, New York City, 15c.</p> <p>(14) <i>The Engineering Record</i>, New York City, 12c.</p> <p>(15) <i>Railroad Gazette</i>, New York City, 10c.</p> <p>(16) <i>Engineering and Mining Journal</i>, New York City, 15c.</p> <p>(17) <i>Street Railway Journal</i>, New York City, 35c.</p> <p>(18) <i>Railway and Engineering Review</i>, Chicago, Ill.</p> <p>(19) <i>Scientific American Supplement</i>, New York City, 10c.</p> <p>(20) <i>Iron Age</i>, New York City, 10c.</p> <p>(21) <i>Railway Engineer</i>, London, England.</p> <p>(22) <i>Iron and Coal Trades Review</i>, London, England.</p> <p>(23) <i>Bulletin, American Iron and Steel Assoc.</i>, Philadelphia, Pa.</p> <p>(24) <i>American Gaslight Journal</i>, New York City, 10c.</p> <p>(25) <i>American Engineer</i>, New York City, 20c.</p> <p>(26) <i>Electrical Review</i>, London, England.</p> <p>(27) <i>Electrical World and Electrical Engineer</i>, New York City, 10c.</p> | <p>(28) <i>Journal, New England Water-Works Assoc.</i>, Boston, 75c.</p> <p>(29) <i>Journal, Society of Arts</i>, London, England.</p> <p>(30) <i>Annales des Travaux Publics de Belgique</i>, Brussels, Belgium.</p> <p>(31) <i>Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand</i>, Brussels, Belgium.</p> <p>(32) <i>Memoires et Compte Rendu des Travaux, Soc. Ing. Civ. de France</i>, Paris, France.</p> <p>(33) <i>Le Génie Civil</i>, Paris, France.</p> <p>(34) <i>Portefeuille Economique des Machines</i>, Paris, France.</p> <p>(35) <i>Nouvelles Annales de la Construction</i>, Paris, France.</p> <p>(36) <i>La Revue Technique</i>, Paris, France.</p> <p>(37) <i>Revue de Mécanique</i>, Paris, France.</p> <p>(38) <i>Revue Générale des Chemins de Fer et des Tramways</i>, Paris, France.</p> <p>(39) <i>Railway Master Mechanic</i>, Chicago, Ill.</p> <p>(40) <i>Railway Age</i>, Chicago, Ill., 10c.</p> <p>(41) <i>Modern Machinery</i>, Chicago, Ill., 10c.</p> <p>(42) <i>Transactions, Am. Inst. Elec. Eng.</i>, New York City, 50c.</p> <p>(43) <i>Annales des Ponts et Chaussées</i>, Paris, France.</p> <p>(44) <i>Journal, Military Service Institution</i>, Governor's Island, New York Harbor, 75c.</p> <p>(45) <i>Mines and Minerals</i>, Scranton, Pa., 20c.</p> <p>(46) <i>Scientific American</i>, New York City, 10c.</p> <p>(47) <i>Mechanical Engineer</i>, Manchester, England.</p> <p>(48) <i>Proceedings, Eng. Soc. W. Pa.</i>, 410 Penn Ave., Pittsburgh, Pa., 50c.</p> <p>(49) <i>Transactions, Mining Institute of Scotland</i>, London and Newcastle-upon-Tyne.</p> <p>(50) <i>Municipal Engineering</i>, Indianapolis, Ind., 25c.</p> <p>(51) <i>Proceedings, Western Railway Club</i>, 225 Dearborn St., Chicago, Ill., 25c.</p> <p>(52) <i>American Manufacturer and Iron World</i>, 59 Ninth St., Pittsburgh, Pa.</p> <p>(53) <i>Minutes of Proceedings, Inst. C. E.</i>, London, England.</p> <p>(54) <i>Power</i>, New York City, 10c.</p> |
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LIST OF ARTICLES.

Bridge.

- Modern Practice in Bridge Shop Work.* W. H. Pratt. (4) Oct.
 Some Old Examples of Bascule Bridges.* K. Hellenthal. (4) Oct.
 The Redheugh Bridge, Newcastle-on-Tyne.* (11) Oct. 4, 18.
 The Physical Condition and Safety under Present Loads of the New York & Brooklyn Bridge.* (13) Oct. 10.
 The Condition of the Brooklyn Bridge. A Report to E. A. Philbin, District Attorney, New York.* Edwin Duryea, Jr., and Joseph Mayer. (14) Serial beginning Oct. 12, ending Oct. 19.
 The Luxemburg Stone Arch Viaduct.* (14) Oct. 12.
 An Expert Report on the Improvement of the Brooklyn Bridge Terminals. (13) Oct. 17.
 Methods of Construction of the New Cambridge Bridge Substructure, Boston, Mass.* Sanford E. Thompson. Assoc. M. Am. Soc. C. E. (13) Oct. 17.
 Two New German Bridges with Transverse Articulation and Freely Suspended Floors.* (13) Oct. 17.
 The Manhattan Terminal of the Brooklyn Bridge.* (15) Oct. 18.
 The Northport Bridge.* (14) Oct. 19.
 The Rockville Bridge of the Pennsylvania.* C. W. Hardt. (15) Oct. 25.
 Bridges in the Pan-American Exposition Grounds.* (14) Oct. 26.
 The Brooklyn Bridge Terminal Report. (17) Oct. 26.
 Melan Arch Park Bridges at Washington, D. C. W. J. Douglas. (13) Oct. 31.
 Experiments on French Metal Bridges. (14) Nov. 9.
 The Rockville Stone Arch Railway Bridge.* (14) Nov. 9.
 Ponts-Bascules Américains, Système Page.* (33) Oct. 19.

Electrical.

- The Electric Transmission of Power from Niagara Falls.* Lewis B. Stillwell. (42) Aug. and Sept.
 An Improved Apparatus for Arc-Light Photometry. Charles P. Matthews. (42) Aug. and Sept.
 Efficiency of Multiple Voltage Control in Electric Power Transmission. Lehman B. Holt. (1) Sept.
 Polyphase Electric Working.* A. C. Eborall. (29) Serial beginning Sept. 13, ending Nov. 7.
 Blue Printing by Electric Light.* S. B. Whinery. (58) Oct.; (18) Nov. 9.
 Specification for Steam, Exhaust, Water and Condenser Piping for an Electric Power Station. (8) Oct.
 Parallel Running of Alternators Ernest J. Berg. (42) Oct.
 Electrical Oscillations of High Frequency.* Arthur V. Abbott. (4) Oct.
 Some Fundamentals of Electric Meters. Caryl D. Haskins. (42) Oct.
 Metering of Electrical Energy. Harry P. Davis. (42) Oct.
 Theoretical Investigation of Some Oscillations of Extremely High Potential in Alternating High Potential Transmissions. Charles Proteus Steinmetz. (42) Oct.
 Battersea Central Electric Power Station. (12) Oct. 4.
 Electric Conduits. (26) Oct. 4.
 Electric Light and Traction at Croydon.* (26) Oct. 4.
 Battersea Electricity Works.* (26) Oct. 4.
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 Breakdowns of Electrical Machinery.* Michael Longridge. M. Inst. C. E. (47) Oct. 5.
 The Inductor Alternator.* Edward Heitmann. (27) Serial beginning Oct. 5, ending Oct. 19.
 The American Nernst Lamp.* (26) Oct. 11.
 Keighley Electricity Works. (26) Oct. 11.
 The Power Station at Jaice, in Bosnia.* (12) Oct. 11.
 The Bay Counties, California; Power Transmission System, Colgate Plant.* (27) Oct. 12.
 A Note on Loaded Conductors. M. I. Pupin. (27) Oct. 12.
 A Simple and Efficient Mercury Jet Interrupter for Röntgen Ray Induction Coils.* R. H. Cunningham. (27) Oct. 12.
 Electrical Installation and Decorative Work in Connection with Exposition Buildings. Luther Stieringer, A. I. E. E. (14) Oct. 12.
 The Power Plant of the Colonial Hotel, Nassau, Bahama Islands.* (14) Oct. 12.
 The Electric Power Plant at the Andun-le-Fiche Blast Furnaces and Collieries.* (22) Oct. 18.
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- Gas-Engine Research. Frederic W. Burstall. (11) Serial beginning Oct. 25, ending Nov. 8.
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Metallurgical.

- The Correct Treatment of Steel. C. H. Ridsdale. (11) Serial beginning Sept. 20, ending Nov. 15; (20) serial beginning Nov. 7, ending Nov. 21.
 The Influence of Titanium on Cast Iron and Steel. Auguste J. Rossi. (47) Serial beginning Nov. 2, ending Nov. 9.
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 The Early History of Open-Hearth Steel Manufacture in the United States. Samuel T. Wellman. (20) Dec. 5.

Military.

- Late Developments in Ordnance and Armor. J. F. Meigs, M. Soc. N. A. (13) Nov. 21.
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Miscellaneous.

- Engineering Valuations. (11) Serial beginning July 5, ending Nov. 29.
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Railroad.

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 Note sur la Machine Compound No. 8701 de la Société Italienne des Chemins de Fer Méridionaux: Essais Comparatifs avec les Machines Compound de la Compagnie de l'Ouest.* E. Decourt. (38) Nov. 23.
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Railroad, Street.

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- Ventilation and Heating in the Glasgow Art Galleries. (14) Nov. 16.
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- Spillways and Drainage Areas. E. Sherman Gould, M. Am. Soc. C. E. (13) Nov. 14.
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Waterways.

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De l'Influence des Travaux de Régularisation sur le Régime des Rivières, Notamment en ce qui Touche les Inondations. L. L. Vauthier. (43) 2^e Trimestre, 1901.

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Edited by William H. Fowler, M. Inst. C. E. Leather, 6 x 4 ins., 387 + 158 pp., illus. Scientific Publishing Co., Manchester. 2 shillings, 6 pence.

In this edition numerous changes and additions have been made in the attempt to bring all the information up to date. The issue of Fowler's Electrical Year Book last year, as a separate publication, has permitted the electrical section in the present work to be much curtailed, and confined to such general data as are needed by the mechanical engineer. To the engine section an addition has been made in the form of a series of notes on the practical designing of valves and valve gears. Extensive additions have also been made to the chapters on strength of materials and on machine tools. The section on gas and oil engines has also been revised, and contains some new data regarding recent developments in large-sized engines. There is an index of forty-eight pages.

BUCHANAN'S TABLES OF SQUARES.

Containing the Square of every Foot, Inch, and Sixteenth of an Inch between One-Sixteenth of an Inch and Fifty Feet. For Beginners and Calculators. By E. E. Buchanan. Ninth Edition. Cloth, 7 x 4 ins., 102 pp. New York, Spon & Chamberlain, 1901. \$1.00.

In these tables the root is given in feet, inches, and sixteenths of an inch, the square in feet and decimals of a foot. The preface states that the root actually used in obtaining the squares was in feet and decimals of a foot; it also says that the method used in calculating and checking these squares precludes the possibility of an error.

THE METALLURGY OF IRON.

By Thomas Turner. Being One of a Series of Treatises on Metallurgy, Written by Associates of the Royal School of Mines. Edited by Professor Sir W. Roberts-Austen, K. C. B., F. R. S. Second Edition, Revised. Cloth, 9 x 6 ins., 14 + 367 pp., illus. London, Charles Griffin & Company, Limited, 1900. 16 shillings. (Donated by J. B. Lippincott Company.)

The preface states that this is not a merely elementary textbook on the one hand, nor an exhaustive treatise on the other; it is primarily intended for persons who are connected with the manufacture of iron and steel, and who may, therefore, be assumed to have already some general knowledge of the subjects discussed. The history of the manufacture of iron and steel and the portions dealing with foundry practice and with the reactions of the puddling furnace have been treated more fully than is usual in metallurgical treatises. In this edition the work has not been altered in its general plan or scope, but a number of minor changes have been introduced for the purpose of bringing the information up to date. The Contents are: The Early History of Iron; Modern History of Iron; The Age of Steel; Chief Iron Ores; Preparation of Iron Ores; The Blast Furnace; The Air Used in the Blast Furnace; Reactions of the Blast Furnace; On the Fuel Used in the Blast Furnace; Slags and Fluxes of Iron Smelting; The Properties of Cast Iron; Foundry Practice; Wrought Iron; Indirect Production of Wrought Iron; The Puddling Process; Further Treatment of Wrought Iron; Corrosion of Iron and Steel. There is an index of sixteen pages.

* Unless otherwise specified, books in this list have been donated to the Library by the Publisher.

THE VENTILATION OF THE SCHOOL ROOM.

By Wm. J. Baldwin, M. Am. Soc. C. E., M. Am. Soc. M. E. Cloth, 7 x 5 ins., 42 pp., illus. Published by the Author, New York, 1901. \$1.00.

SEWAGE AND THE BACTERIAL PURIFICATION OF SEWAGE.

By Samuel Rideal. Cloth, 9 x 6 ins., 2 + 278 pp., illus. New York, John Wiley & Sons, 1901. \$3.50.

In the preface the author states that the rapid development in modern ideas of sewage purification by bacterial processes necessitates a careful review of the methods at present sanctioned; and that recent important reports by various cities, sanitary commissions, etc., and frequent discussions and papers on this subject in the technical press, lead him to think that a *résumé* would be acceptable. He also states that the theoretical basis of bacterial changes, so far as they have been studied, must underlie all the practical schemes which may in the future be put forward, and it has been his endeavor to deal with the subject from this view point. The Contents are: Character of Sewage, and Primary Methods of Disposal; Chemical Analysis of Sewage and Effluents; Bacteria Occurring in Sewage; Chemical Changes Produced by Bacteria; Irrigation and Sewage Farms; Subsidence and Chemical Precipitation; Sterilization; Bacterial Purification; Agricultural Value of Bacterial Effluents; Distribution and Distributors; Trade Effluents. There is an index of ten pages.

ARCHITECTURAL ENGINEERING.

With Especial Reference to High Building Construction, Including Many Examples of Prominent Office Buildings. By Joseph Kendall Freitag, Assoc. M. Am. Soc. C. E. Second Edition, Rewritten. Cloth, 9 x 6 ins., 14 + 407 pp., illus. New York, John Wiley & Sons, 1901. \$3.50.

The author has endeavored in this book to define and illustrate, in a manner as practicable as possible, such of the fundamental principles in the constructive design of modern high buildings as may prove useful to architects, engineers and students. The subject of fireproofing has been touched upon in this edition, but only so far as is necessary to a proper understanding of the design and calculation of the framework. The largely local character of the illustrations in the previous edition has been supplemented by notable examples in different localities, so as to make the scope more general than formerly. An endeavor has been made to present only the most practical methods. The Contents are: "Skeleton" or "Cage" Construction; Fire Protection; Typical Buildings, Erection, Permanency, etc.; Floors and Floor Framing; Exterior Walls—Piers; Spandrels and Spandrel Sections—Bay Windows; Columns; Wind-Bracing; Specifications—Inspection. There is an index of fifteen pages.

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Die Hebezeuge, Theorie und Kritik Ausgeführter Konstruktionen mit Besonderer Berücksichtigung der Elektrischen Anlagen. Ein Handbuch für Ingenieure, Techniker und Studierende. Von Ad. Ernst. Dritte Neubearbeitete Auflage unter Mitwirkung von W. Maier und R. Rau. 3 vol. Berlin, Julius Springer, 1899.

Traité Pratique des Machines Marines Motrices, des Machines Auxiliares, des Machines à Pétrole et à Gaz. Description Montage, Régulation, Conduite, Réparations Rédigé Conformément aux Programmes à l'Usage des Mécaniciens de la Marine Militaire à Ceux de la Marine du Commerce. Par J. B. Girard. 2 vol. Paris, Ch. Béranger, 1901.

Vorlesungen ueber Technische Mechanik. Von Dr. Aug. Föppl. Second Edition. 4 vol. Leipzig, B. G. Teubner, 1900.

The Engineer or Architect as the Arbitrator between the Employer and the Contractor, and His Other Functions under Building Contracts. By Charles Currie Gregory. London, William Clowes and Sons, 1901.

The Engineering Index. Five Years, 1896-1900. Edited by Henry Harrison Suplee, M. Am. Soc. M. E., Assisted by J. H. Cuntz. New York and London, The Engineering Magazine, 1901.

Handbuch der Ingenieurwissenschaften. Third Edition, Enlarged. 10 vol. Leipzig, Wilhelm Engelmann, 1898-1901.

Knight's American Mechanical Dictionary. A Description of Tools, Instruments, Machines, Processes, and Engineering; History of Inventions; General Technological Vocabulary; and Digest of Mechanical Appliances in Science and the Arts. By Edward H. Knight. 3 vol. Boston, Houghton, Mifflin and Company, 1876.

Knight's New Mechanical Dictionary. A Description of Tools, Instruments, Machines, Processes, and Engineering, with Indexical References to Technical Journals (1876-1880). By Edward H. Knight. Boston and New York, Houghton, Mifflin and Company, 1883.

Poole's Index to Periodical Literature. Abridged Edition Covering the Contents of Thirty-Seven Important Periodicals, 1815-99. By William I. Fletcher and Mary Poole. Boston and New York, Houghton, Mifflin and Company, 1901.

Les Travaux Publics, les Mines et la Métallurgie aux Temps des Romains, la Tradition Romains jusqu'à Nos Jours. Par Alfred Leger. Paris, J. Dejeu & Cie., 1875.

Portland Cement. Its Manufacture, Testing and Use. By D. B. Butler, Assoc. M. Inst. C. E. London, E. & F. N. Spon, Ltd.; New York, Spon & Chamberlain, 1899.

A Map of West Virginia. Compiled by Russell L. Morris, from County Atlases, Government and Other Surveys, Showing the Coal, Oil and Gas Developments, Prominent Anticlinal Axes, and the Outcrops of the Different Coal Series. Second Edition. Morgantown, W. Va., 1901.

New Tables for the Complete Solution of Ganguillet and Kutter's Formula for the Flow of Liquid in Open Channels, Pipes, Sewers and Conduits. By Colonel E. C. S. Moore. London, B. T. Batsford, 1901.

Traité d'Hydraulique. Alimentation et Distribution d'Eau; Jauges; Établissements de Fontaines Publiques. Par J. Armand Olive. Paris, Georges Fanchon.

Der Elbstrom, Sein Stromgebiet und Seine Wichtigsten Nebenflüsse. Eine Hydrographische, Wasserwirtschaftliche und Wasserrechtliche Darstellung. Im Auftrage der Deutschen Elbuferstaaten und unter Bethheiligung des Preussischen Wasser-Ausschusses Herausgegeben von der Königlichen Elbstrombauverwaltung zu Magdeburg 4 vol. in 5, and Atlas. Berlin, Dietrich Reimer, 1898.

Hydraulique Fluviale. Par Mc. Ct. Lechalas. Paris, Baudry et Cie., 1884.

Hydrologische Untersuchungen an der Weser, Elbe, dem Rhein und Mehreren Kleineren Flüssen. Ihre Anwendungen auf die Praxis und Experimentaltheorie nebst Speziellen Mittheilungen über neuere Instrumente. Von Johannes von Wagner. Braunschweig, Verlag von Goeritz & zu Putlitz, 1881.

Mannuel Hydrologique du Bassin de la Seine. Par M. A. de Préau-deau, sous la Direction de M. Ch. Lefébure de Fourcy, et de M. G. Lemoine. Paris, Imprimerie Nationale, 1884.

Der Oderstrom, Sein Stromgebiet und Seine Wichtigsten Nebenflüsse. Eine Hydrographische, Wasserwirtschaftliche und Wasserrechtliche Darstellung. Auf Grund des Allerhöchsten Erlasses vom 28 Februar 1892 Herausgegeben vom Bureau des Ausschusses zur Untersuchung der Wasserhältnisse in den der Ueberschwemmungsgefahr besonders Ausgesetzten Flussgebieten. 4 vol. in 5, and Atlas. Berlin, Dietrich Reimer, 1896.

Der Rheinstrom und Seine Wichtigsten Nebenflüsse von den Quellen bis zum Austritt des Stromes aus dem Deutschen Reich. Eine Hydrographische, Wasserwirtschaftliche und Wasserrechtliche Darstellung mit Vorzugsweise Eingehender Behandlung des Deutschen Stromgebietes. Im Auftrag der Reichkommission zur Untersuchung der Rheinstromverhältnisse Herausgegeben von dem Centralbureau für Meteorologie und Hydrographie im Grossherzogthum Baden. (With Atlas.) Berlin, Ernst & Korn, 1889.

Rivières a Courant Libre. Par F. B. de Mas. Paris, Baudry & Cie., 1899.

Traité des Routes, Rivières & Canaux. Par P. Berthot. 3 vol.
Paris, Fanchon et Artus.

Cassier's Magazine (to complete set) 2 nos.

Deutsche Bauzeitung (to complete set) 25 nos.

Electrical Review (to complete set) 2 vol. 10 nos.

Electricity (to complete set) 6 vol. 8 nos.

Street Railway Journal (to complete set) 1 no.

SUMMARY OF ACCESSIONS.

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By Purchase (including 41 numbers, completing vol- umes of periodicals	71
Total.....	436

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DENTON, JAMES EDGAR	Nov. 5th, 1901
WILSON, JOHN MOULDER	Dec. 31st, 1901

DEATHS.

BATTERSON, J. G Elected Fellow, June 7th, 1876; died
Sept. 18th, 1901.
HUTTON, WILLIAM RICH Elected Member, Jan. 8th, 1873; died
Dec. 11th, 1901.
RAYMOND, THOMAS LAIDLAW Elected Member Oct. 6th, 1897; died
Nov. 15th, 1901.
THORNDIKE, JOHN LABBIN Elected Member, May 7th, 1873; died
Oct. 12th, 1901.

